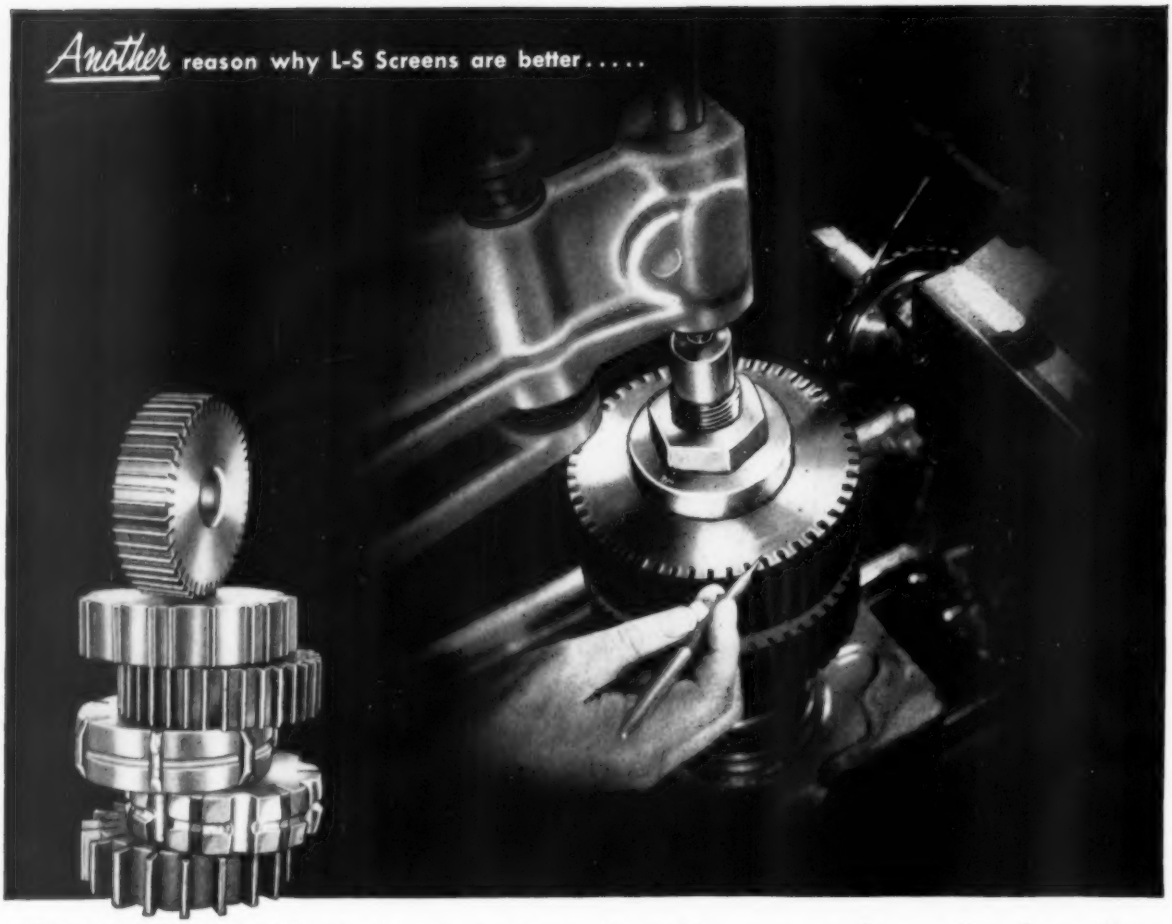
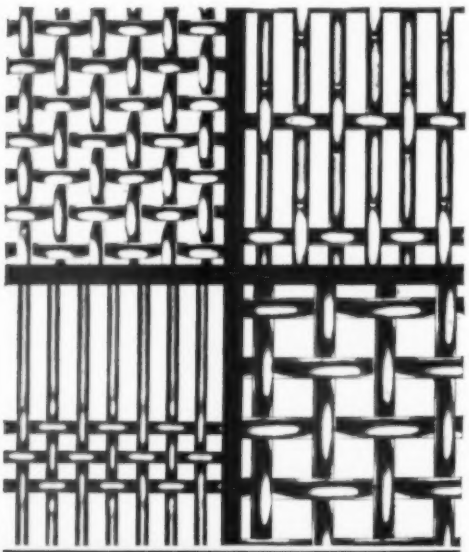
PIT and QUARRY

OCTOBER 1958

Loading Stone on the Hudson



LUDLOW-SAYLOR designs and makes its own wire crimping dies to insure precision weaving and dimensional stability



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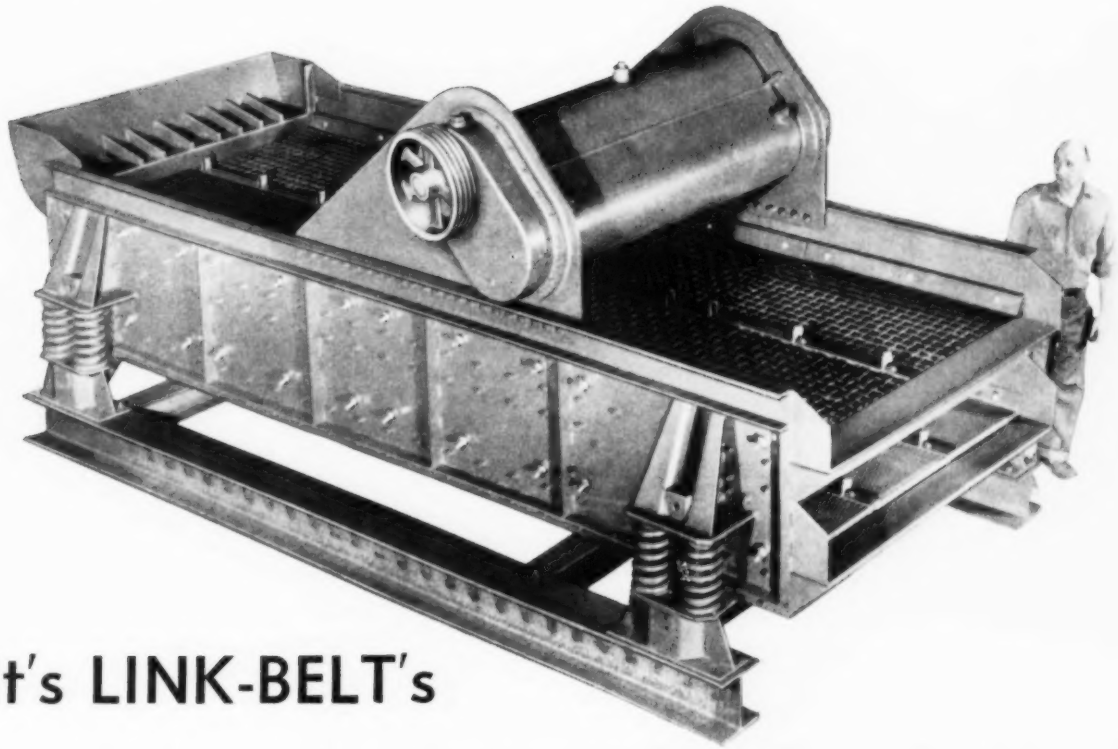

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To subscribers: When requesting change of address, kindly send old as well as new address.

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

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How semi-automatic hard surfacing saves time and material at Bradford Hills Quarry

"Changing to the semi-automatic application of nickel manganese surfacing material almost saved us the price of the Wear-O-Matic machine in just five weeks," says Thomas Risbon, Welding Foreman for Bradford Hills Quarry, East Petersburg, and Downingtown, Pa.

The Wear-O-Matic unit at Bradford Hills Quarry is used almost exclusively for maintaining their new 57-60 Universal Impactor. Over a five week period, nightly maintenance on this crusher required 500 pounds of 7/64" Wear-O-Matic nickel manganese wire to provide normal operating tolerances. During a similar period, 800 pounds of ¼" nickel manganese stick electrodes were required to provide the same amount of wear protection to the impactors.

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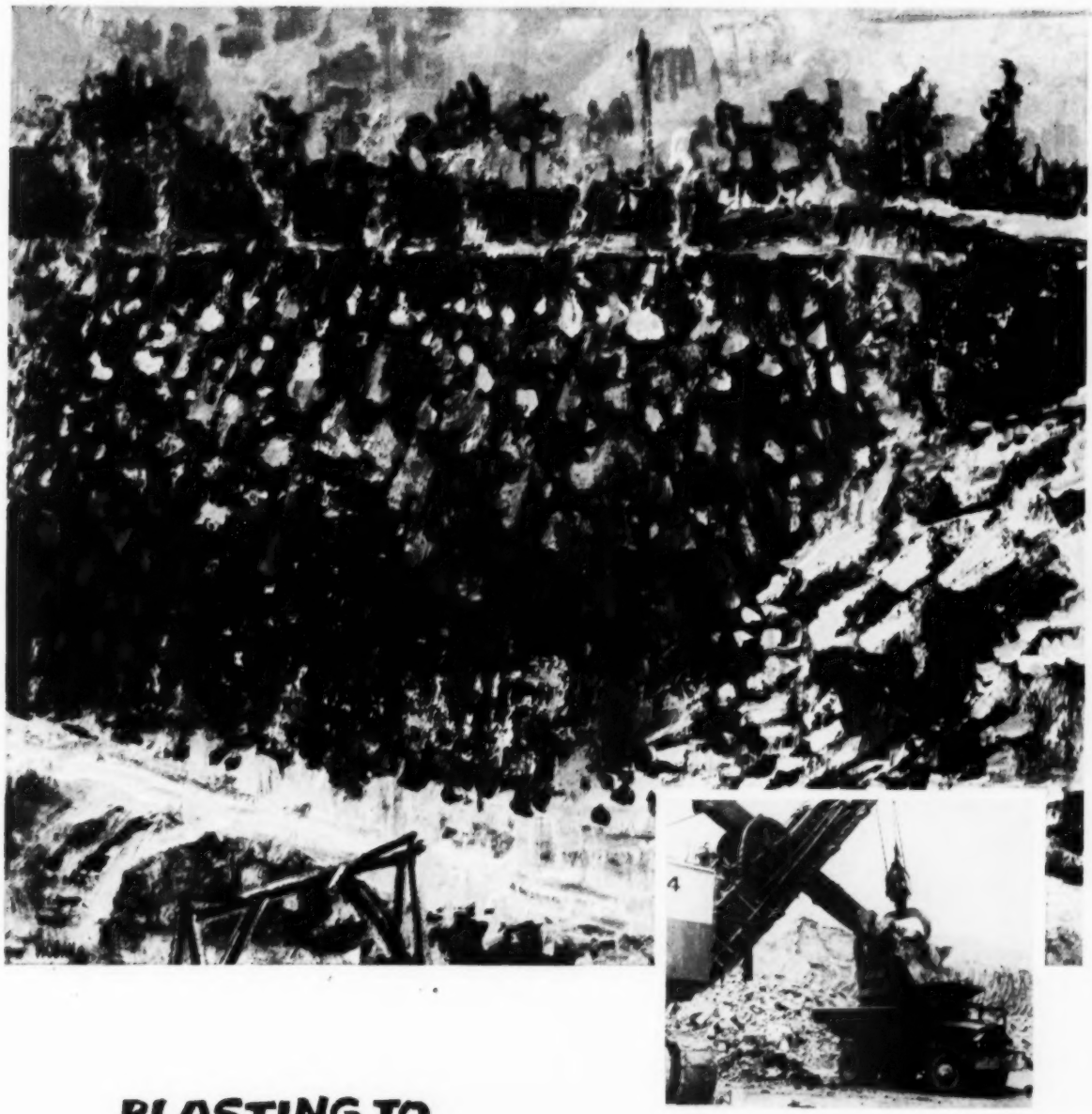

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Myers Gravel & Sand Co., Inc. selects Deister Screens for new plant

Seventy-five years of "know-how" in the production of aggregates to exacting specifications went into the planning of Myers' new plant at Anderson, Indiana, approximately one mile north of their present main plant. Before specifying their new vibrating screens, Mr. Robert Myers, Vice President and General Manager, and Superintendent Alex Faulds visited other outstanding producers in the Midwest to see for themselves if the reports on the performance and efficiency of Deister Screens were accurate.

What they saw convinced them. Plant owners and superintendents alike confirmed that Deisters are big capacity screens, ruggedly built to run day after day, year after year, without downtime.

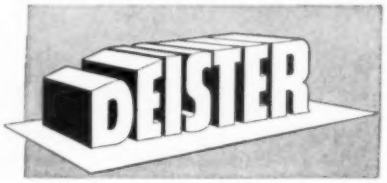
Myers installed their first Deister in their partially built plant . . . a Type UHS triple-deck 4' x 10'. It did such an outstanding job, handling up to 190-200 tph, that the second Deister, a double-deck 4' x 8', was immediately ordered and installed.

If you plan to expand or modernize your plant to meet today's rigid specifications, we invite you, too, to talk to Deister owners. Learn how you can benefit from such exclusive Deister features as Adjustable Slope Panels . . . Unitized Life-time Vibrating Mechanism with oil-mist lubrication *and* Deister's Opposed Elliptical Throw which controls movement of the material on the screen for greatest sizing speed, accuracy and maximum production. Write for recommendations on your screening problem.

Top: Overall view of new plant with Deister triple deck 4' x 10' screen in foreground.

Below: Superintendent Alex Faulds and the Deister double deck 4' x 8'.

DEISTER MACHINE CO.
1933 E. Wayne St., Ft. Wayne, Ind.



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Stop Highway Fund Diversion

WITH public attention focused on the national highway program and its increasingly apparent benefits, there is real danger that efforts to increase diversion of highway funds for other purposes may go unnoticed. The fact that more money is being spent for highways than ever before is also an invitation to those seeking funds for special projects. The greater participation of the national government in the provision of funds has put diversion on a national scale, whereas formerly it was largely confined to individual states.

The National Highway Program is now well under way, and increasingly greater sums are pouring into the Highway Trust Fund. Early in the program some raids were made on these funds by governmental agencies, but such a storm of protest was aroused that more recent attempts to divert some of this money for other purposes have failed. The last Congress was especially alert to this danger; the next Congress should be encouraged to be equally vigilant.

ILLINOIS has had one of the worst records among the states, with nearly $100 million diverted from its highway funds up to date. This is the equivalent of 1,800 miles of two-lane highways. One of the most active and effective groups now fighting diversion is the Illinois Highway Users Conference. This organization fights diversion from the ground up, directly contacting and informing individuals, newspaper editors, and state legislators.

In a recent widely-distributed release this organization points out that the money paid by a motorist in the form of gasoline taxes and license fees pays his fair share of the cost of highways in his state. Any use of this money for anything other than highways is diversion, and this means that the motorist is being subjected to discriminatory taxation, additional taxes which only the motorist has to pay. Diversion of such funds also makes it necessary to impose additional taxes to maintain the highways, creating a vicious circle of increased taxation and increased raiding.

Motorists are further penalized by being forced to drive over bad roads when they have paid for good ones. Such roads are dangerous to drive on, an additional penalty. Bad roads also create congestion, reducing the efficiency of movement of goods, workers, etc. This situation reduces the volume of trade and greatly increases the cost of production. Tourists and other vehicles shun such areas, resulting in further business loss. Finally, diversion can jeopardize the security of the nation. First class highways are vitally necessary for the rapid flow of men and materials in an emergency.

THE advice given at the Highway Users Conference to Illinois motorists is equally important to all motorists. Its members ask that you tell your family, friends, and associates of the effects of diversion, that you inform the editors of your local papers, and that you contact your state senators and representatives to protest any diversion. Producers of materials used in highway construction have an additional incentive to prevent diversion, and they should be especially active and alert. They are in a good position to spot such efforts promptly, and their advice is more likely to be heeded, not only by state legislators but also by congressmen.

Walter E. Trunkey

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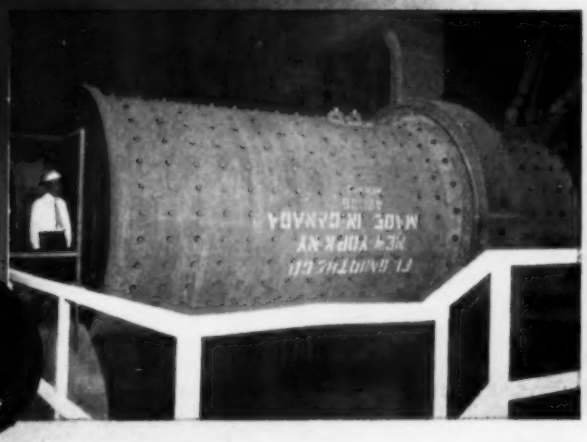

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Washington News Letter

By S. HERBERT UNTERBERGER

Housing Developments

HOUSING experts in Washington are predicting that 1958 will be a big year for housing, but that 1959 will show a marked decline.

The year is far enough along so that they are confidently predicting that almost 1.2 million new houses will be started in 1958. This is almost 200,000 more than in 1957, and while it is not quite up to the 1956 record, it may turn out to be as high as or higher than any other year since 1950. In view of the general upward price trend, if measured in terms of dollar volume, 1958 may turn out to set a new record high.

But this development and the ensuing difficulties, if the dire predictions come true, only bear further testimony to the fact that the fate of the housing industry is not in its own hands at all but, rather, almost entirely in the hands of the Federal Government. Every analysis of the situation presents the same conclusion. The 1957 expansion was due almost entirely to the government's various actions, which made a large amount of mortgage money available at reasonable rates and encouraged sales with small down payments.

Before the Emergency Housing Law was passed early this year, the housing experts figured that only about 900,000 new housing starts would occur. This would have made 1958 the worst housing year since the end of World War II. But this law, passed frankly as an anti-recession measure, extended favorable Veterans Administration financing for two years. It also permitted higher interest rates on both VA and military housing mortgages to make them more attractive to lenders, and also eliminated the 2 percent down payment requirement in effect on VA financed houses, thereby facilitating their purchases by veterans who had no opportunity to accumulate savings.

Similarly, the down payment requirements for homes bought with FHA insured loans were reduced. To make these mortgages more attractive to lenders, the Emergency Housing Law gave the Federal National Mortgage Association authority to make commitments to purchase at par up to $1,000,000,000 of federally underwritten mortgages on new homes, each of which was to cost no more than $13,500.

The record of the first four months demonstrated clearly that this program has been effective. By July 31, FNMA had made commitments to purchase nearly 50,000 mortgages involving $584,000,000.

However, the housing industry has learned several times in recent years, "What the government gives, it can also take away." The effectiveness of the "shot in the arm" provided by the Emergency Housing Act is already wearing off. The greater part of the available $1,000,000,000 to guarantee mortgages has been committed and soon it will be gone. Congress has gone home without making any specific provision for further money.

To be sure, the President might be able to use some or all of the $500,000,000 allocated to him to support mortgage buying programs. Not only has he shown no inclination to do this, but, it appears that he is opposed to such action. Since the money was appropriated, his closest economic advisors, who never appeared too much concerned about the recession, have again become alarmed about the danger of inflation. They are fearful that further mortgage guarantees and mortgage buying will feed the fires of inflation. Thus, the contraction and expansion of the housing industry again becomes an incidental result of the Federal Government's economic stability program.

In addition to this tightening up in the mortgage market, Congress also left a huge void in the residential construction outlook when it failed to supply adequate funds for urban renewal, college housing, and other similar projects. Although, under growing pressure, the President may release some of the money under his jurisdiction for these purposes, he does not have too much to use, and even this limited amount will be especially difficult to break loose.

Finally, lenders of conventional mortgages now are in the position of re-enforcing the 1958 and the expected 1959 contraction. During 1958 there was a general easing in the money markets. Because of the recession, businesses were not borrowing nearly so much as in other years. Federal Reserve policy also increased the money available for loans. With more to lend and rather good interest rates available on mortgages, they became rather attractive investments—so attractive, in fact, that the practice of paying commissions for mortgages began to reappear in many locations.

Now, with a business recovery under way, conventional mortgages, as well as others, have lost some of this former attractiveness. Coincidentally, the unusual developments in the bond markets, both corporate and governmental, which have driven the yield on high grade bonds up to (and in some cases beyond) the net yield on mortgages, has siphoned off funds which would normally go into mortgages. The end effect is almost certain to be a rise in mortgage interest rates, plus greater selectivity on the part of

(*Continued on page 74*)

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Specification Sand

from rock, aggregate or natural sand with an

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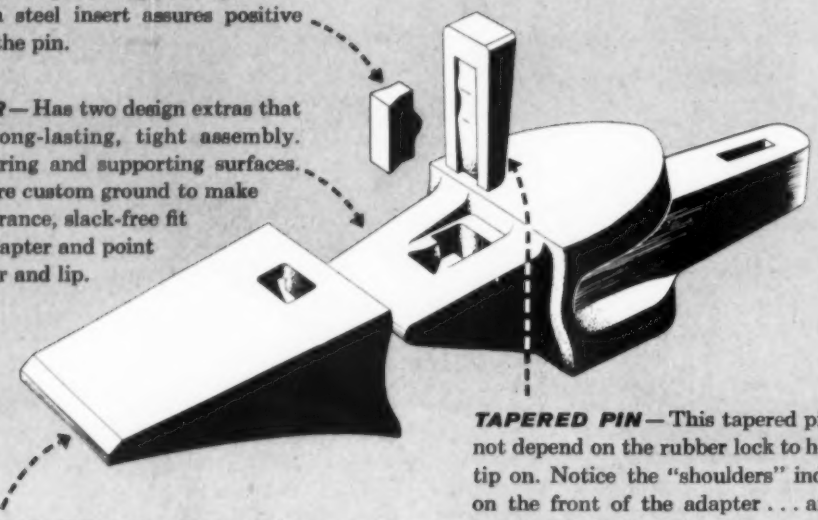

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1 You get up to four times extra wear over other 2-part teeth. We cast these new teeth of a tougher, new and special heat-treated alloy that slashes your replacement and maintenance costs.

2 These reversible teeth stay sharp, to penetrate cleanly and easily without straining your shovel. Reversing point is easy. This reversible feature is particularly important on corner teeth. It maintains digging efficiency throughout tooth life.

3 Positive locking device — Amsco's unique pin-locking design secures tip to adapter in tight, positive, metal-to-metal contact.

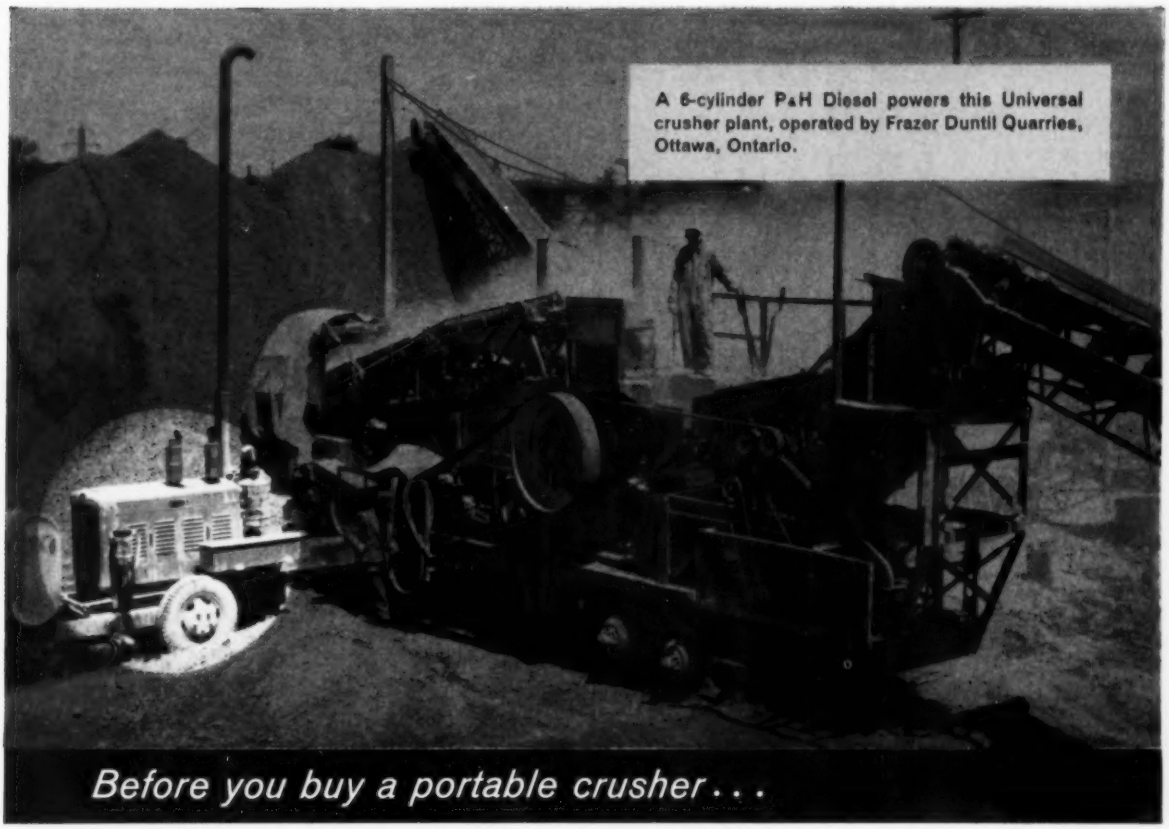
Order the Amsco 2-part Simplex from your local power shovel dealer.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

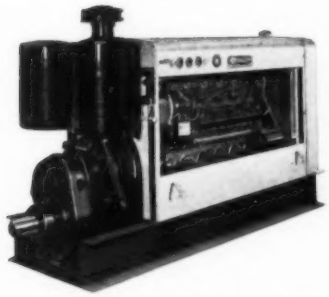
OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC



A 6-cylinder P&H Diesel powers this Universal crusher plant, operated by Frazer Duntil Quarries, Ottawa, Ontario.

Before you buy a portable crusher . . .

KNOW THESE ADVANTAGES OF P&H DIESEL POWER



6-cyl. P&H Diesel Power Plant with Cotta transmission and extra heavy duty "dual-type" air cleaners. P&H Diesels available in 2, 3, 4 and 6 cyl. models ranging from 40 to 280 H.P.

1. MOST POWERFUL DIESEL MADE, POUND FOR POUND—Compact, modern aluminum design makes it up to 1000 pounds lighter than diesels of comparable power. You get more usable power . . . less performance-robbing "dead weight" . . . greater portability and faster set-up.

2. EASIEST TO OPERATE—Responsive P&H Diesels have the most modern and simplified fuel injection system in existence—built around the famous Roosa-Master pump. They start faster—idle better—*one adjustment times the entire engine!*

3. EASIEST TO MAINTAIN—The P&H Diesel has 25% fewer parts and all wearing parts are completely interchangeable. You can even remove a complete "Unitized" P&H power assembly—and replace it with a new one—in less than an hour . . . without removing the engine from its mounts.

It will pay you to specify P&H Diesel power for your new rock crushing plant or your next repowering job. Contact your P&H dealer. Or write, Dept. 421A.

HARNISCHFEGER

P&H Diesel Engine Division
Crystal Lake, Illinois

Coal Chief scoops and dumps 100 tons a minute!

Four Boom Support Strands, each 3⅝" dia., support the huge boom which towers 160 feet above the ground. These Tiger Brand cables are designed for long service life.

USS American Tiger Brand Hoist Rope. Two of these 2⅝" dia. shovel hoist ropes supply the guts to lift the heaviest loads.

Rigged with USS American Tiger Brand Wire Rope

Here's the latest of the big diggers, the Coal Chief, built by Marion Power Shovel Company. It can scoop up 70 cubic yards at a bite, swing it approximately the length of a football field and dump it in piles more than 96 feet high. It makes the round trip in less than 60 seconds.

This strip mining operation is a joint venture between Simco Peabody Company and Columbus & Southern Power, Columbus, Ohio. All the coal produced will be furnished to the power company . . . about 8,000 tons a day.

The new shovel, like its two predecessors, is rigged throughout with USS* American Tiger Brand Wire Rope. The tremendous power of the shovel is handled by two hoist ropes 2⅝" diameter, and the gigantic boom is supported by four lengths each 105½ feet long, of 3⅝" diameter galvanized boom support strand. Each strand has a catalog strength of 768 tons, for a total of 3,072 tons.

Your equipment may not need such large wire rope, but the fact that all applications on this huge shovel are handled by standard USS American Tiger Brand* constructions emphasizes the quality of the engineering that goes into the complete line of Tiger Brand Wire Rope. For more information, write American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

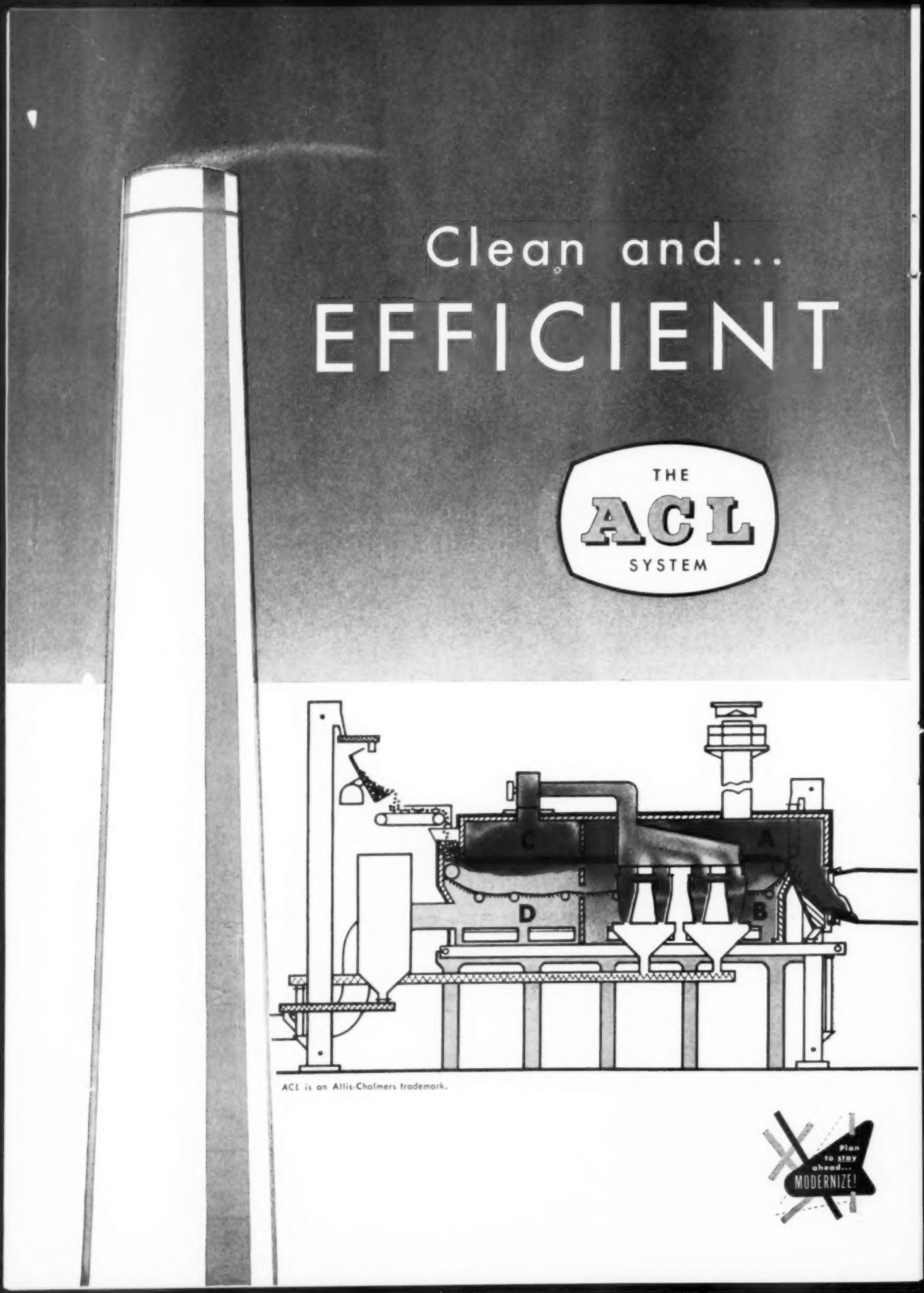
American Steel & Wire
Division of USS United States Steel

*TRADEMARK

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

6,000 tons of overburden per hour can be stripped by this new 70-cubic-yard Marion shovel built for Simco Peabody Company and Columbus & Southern Power.

Enter 16 on card, page 105


Clean and...
EFFICIENT
THE
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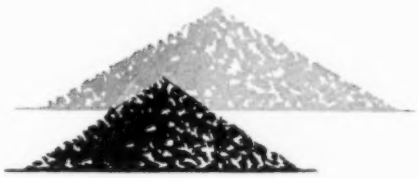
SYSTEM
C
A
D
B
ACL is an Allis-Chalmers trademark.
Plan
to stay
ahead...
MODERNIZE!

A new concept in cleanliness! The new *ACL* system offers lower dust loss — cleaner cement production. Stack discharge is merely a wisp. Complete dust-free plants have been constructed within large cities and in suburban neighborhoods. The system meets even the most stringent municipal air pollution codes. Other advantages are: maximum burning efficiency, reclamation of material, power savings and small space requirements.



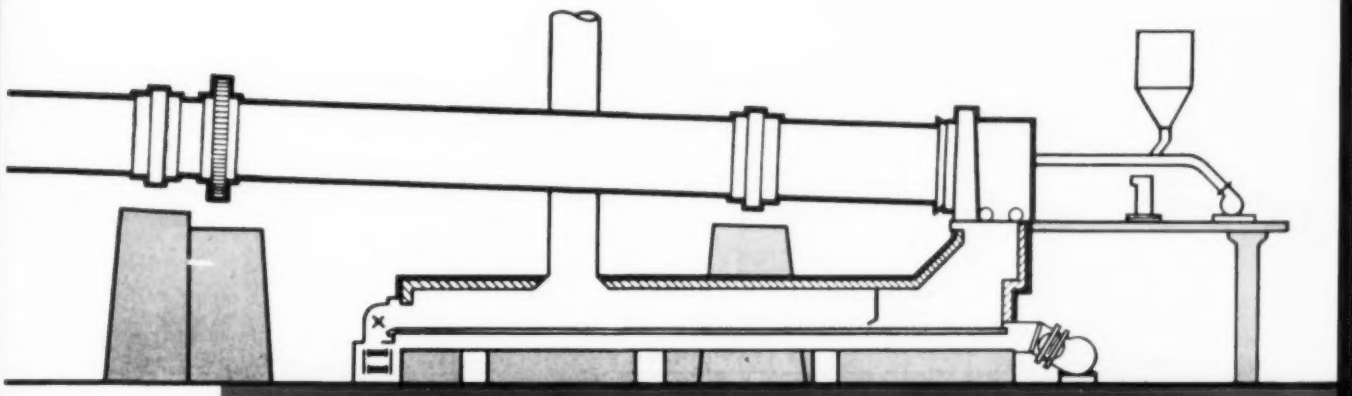
40% less fuel per barrel of clinker

ACL systems now in operation consume fuel at an average of 600,000 Btu per barrel of clinker. Compare this to fuel requirements of conventional long, dry-process kilns which use from 800,000 to 1,000,000 Btu. And the *ACL* double-pass system is designed to use any conventional fuel—powdered coal, fuel oil, natural or coke oven gas.

For details, ask your A-C man for a copy of Bulletin 07B8431. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

How the *ACL* double-pass system works

Partial calcining and dust reclamation take place as hottest gases pass through pellet bed on traveling grate. Gas temperatures are reduced from about 1800 to 500 degrees in this first pass (A to B). Next, gases pass through cyclones where larger dust particles are removed, and carried back to pelletizer. Final dust filtering takes place as gases pass through moist pellets on feed end of grate. In the second pass (C to D) gas temperatures are reduced more. Heat of kiln gases is transferred to material.



ALLIS-CHALMERS

A 3759

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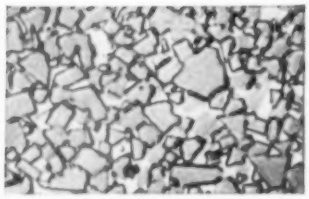
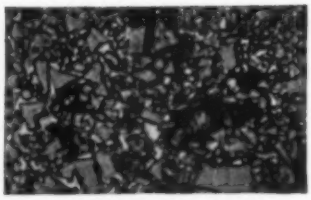
Longer bit life— with *new* Sandvik Coromant Bits



Sandvik Coromant Tungsten Carbide (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.



Low quality Tungsten Carbide (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Type	Thread	Available Diameters, in Inches														
		1⅜	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2¾	3	3½	4	4½	5
S																	
H	F	x	x														
O	113	x															
U	H		x	x	x	x											
L	115		x	x													
D	D					x	x	x	x	x	x	x	x				
E	K												x	x	x	x	
R																	
B	1" Rope			x	x	x											
O	200			x	x	x											
T	1¼" Rope					x	x	x	x		x		x				
T	400						x		x		x						
O	1½" Rope										x	x	x	x	x		
M	600										x	x	x	x			
I	700												x	x			
N	J. 7.5														x	x	
G	2" Rope													x	x	x	x

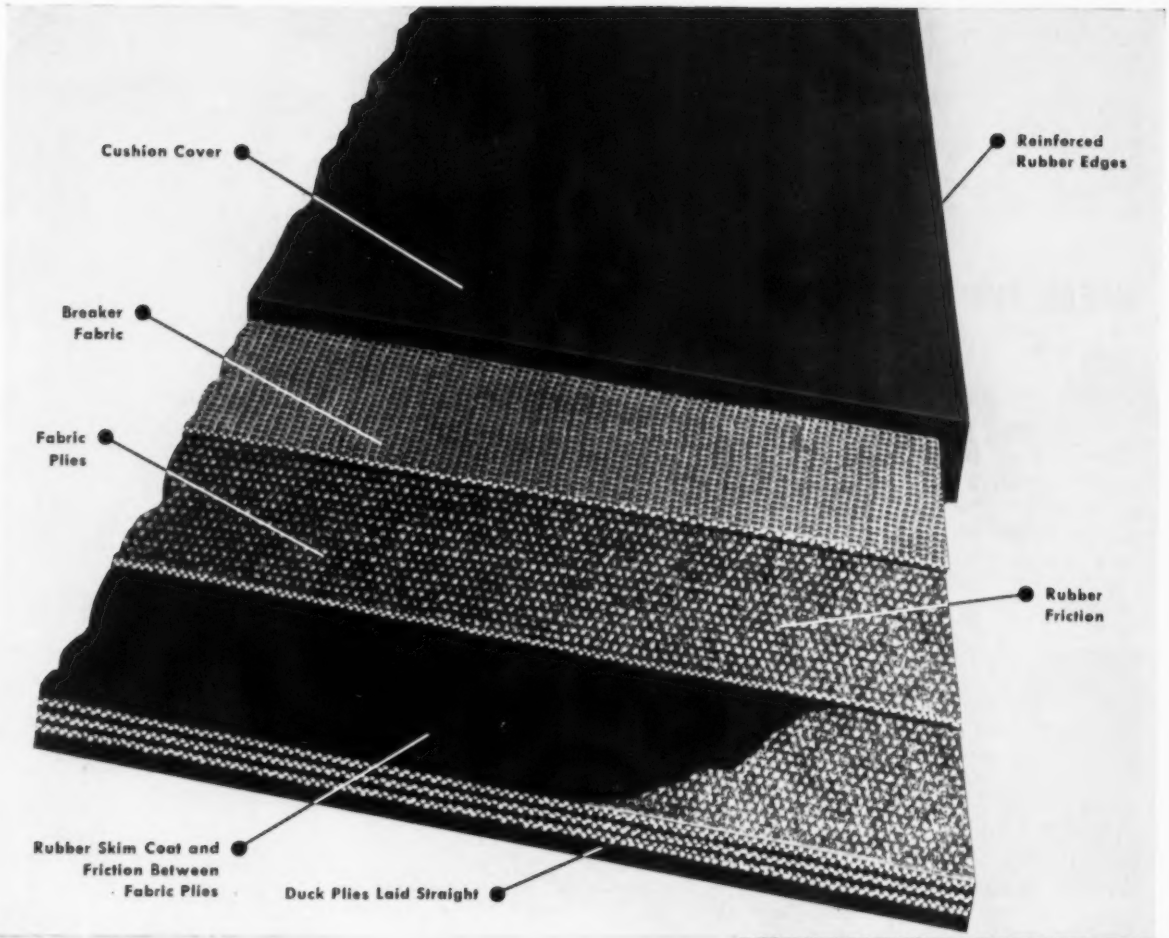
Write or phone today for further details to either of the addresses below:

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

Atlas Copco

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

Enter 20 on card, page 105



The Hamilton Belt story from cover to cover!

Look into this Hamilton belt to see how each component works to give you longer service life at lower cost: Cushion Cover withstands destructive effects of your materials. Breaker Fabric cushions impact. Highest quality rubber impregnation and skim coats between plies give maximum flexibility and adhesion.

Before you buy, tear out this ad and fill in the spaces below. We will send you specific recommendations on the best belt for your operation, and a catalog.

MATERIAL _____
DIAMETER _____
HOT OR COLD _____
HOW LOADED _____
BELT LENGTH _____
BELT WIDTH _____

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MANUFACTURING CORPORATION, TRENTON 3, N. J.

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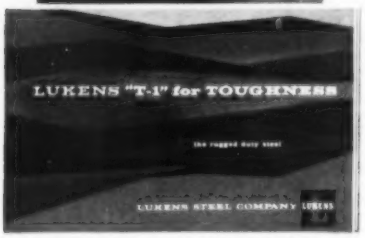
WHERE THE GOING GETS ROUGH...

get tough

WITH LUKENS "T-1" STEEL!
TRADE-MARK

LUKENS ®



WRITE FOR THIS BOOKLET TODAY

■ Wherever rock and gravel, coal and ores come in violent contact with machine and equipment parts, Lukens "T-1" steel – *especially extra tough 321 min. BHN quality* – fights back at wear and abrasion with spectacular success.

It is readily fabricated. You can form or weld it in the field or shop, from stock plate sizes immediately available. It can be used to replace or repair worn bucket teeth, truck and mine car bodies or liners, dozer blades, dipper sticks, crusher teeth, chutes, and many other parts.

Far stronger for its gage than conventional steel, it requires less metal to do equivalent jobs. It remains tough even at sub-zero temperatures.

Contact your nearest warehouse listed below, or write Manager, Marketing Service, 148 Lukens Building, Lukens Steel Company, Coatesville, Pennsylvania. Ask for special bulletin, "*Lukens 'T-1' for Toughness.*"

WAREHOUSES

Ashland, Kentucky, Mansbach Steel Co., 19th St. & River Front
Baltimore 2, Maryland, Wm. G. Wetherall, Inc., 317 President Street
Birmingham 2, Alabama, O'Neal Steel, Inc., P. O. Box 2623
Cleveland 6, Ohio, Mills-Wolf Steel Co., 10006 Carnegie Avenue
Los Angeles 33, California, The R. J. M. Company, 238 Mission Rd.
Montreal, Quebec, Can., Drummond, McCall & Co., Ltd., 930 Wellington St.

HELPING INDUSTRY CHOOSE STEELS THAT FIT THE JOB

News of the Industry

$2,500,000 Packaging Plant Opened by Ideal Cement At Sacramento, Calif.

Ideal Cement Company has opened a new $2,500,000 distribution and packaging terminal located on a 9-acre site near Sacramento, Calif. The plant will serve as a wholesale outlet to provide cement for firms throughout northern California.

Six silos, each 135 ft. tall and with a total storage capacity of 120,000 bbl. will be used to store cement carried in barges from the firm's Redwood City processing plant. Ideal also has truck and rail delivery facilities.

Thorkild Avnsoe of Lone Star Dies in Port Chester, N.Y.

Thorkild Avnsoe, 74, director of the Lone Star Cement Corporation, and formerly executive vice-president and vice-chairman of the board of directors, died recently at the United Hospital in Port Chester, N. Y.

Thorkild Avnsoe

Mr. Avnsoe had been with the Corporation for 47 years, during which time its annual productive capacity grew from 2,800,000 bbl. to 48,900,000 bbl. As vice-president in charge of operations for 24 years and executive vice-president for 7 years, he was widely regarded as the cement industry's finest operations man, responsible for many developments in portland cement manufacturing and for establishing standards of employee safety and plant cleanliness.

Intensely concerned with employee safety and welfare, Mr. Avnsoe inaugurated regular safety meetings, Foremen's Dinners, and other means of improving employee working conditions.

Plans for a $300,000 plant at Lapwai, Idaho, near Lewiston, have been announced by Sunbeam White Sands, Inc., Moscow, Idaho, which was incorporated two years ago to do test work on furnishing filter sands for the Hanford, Wash., atomic works plant and sand-blasting materials for the Bureau of Reclamation. The facility at Lapwai will produce 62,000 tons a year.

Coming Events

October 9-11, 1958—Cleveland, Ohio. Fall operating meeting, National Lime Association. Hotel Cleveland.

October 13-18, 1958—White Sulphur Springs, W.Va. Fall meeting, National Industrial Sand Association. The Greenbrier.

October 20-23, 1958—Chicago. 46th Annual National Safety Congress and exhibit. Conrad Hilton, Congress, Morrison, LaSalle, and Hamilton Hotels.

October 21-22, 1958—Washington, D.C. 4th annual meeting, National Slag Association. Mayflower Hotel.

December 1-4, 1958—Washington, D.C. Annual meeting, Asphalt Institute. Shoreham Hotel.

January 19-21, 1959—Washington, D.C. 14th Annual Convention, National Agricultural Limestone Institute. Hotel Statler.

January 21-22, 1959—Washington, D.C. 4th Annual Convention, National Crushed Limestone Institute. Hotel Statler.

January 26-30, 1959 — Miami Beach. 42nd annual convention, National Crushed Stone Association. Americana Hotel.

February 2-6, 1959 — Miami Beach, Fla. Convention, National Bituminous Concrete Association. Americana Hotel.

February 16-19. New Orleans. 43rd annual convention, National Sand and Gravel Association, 29th annual convention, National Ready Mixed Concrete Association. Roosevelt Hotel.

$3,600,000,000 July Total In Construction Contracts 24 Percent over July '57

Construction contracts in the United States in July totalled more than $3,600,000,000, a gain of 24 percent over the same month of 1957, according to F. W. Dodge Corporation.

The construction news and marketing firm reported that the last three months have been the highest in history, with June ranking first, July second, and May third.

According to Dr. George Cline Smith, the July figures have several significant features.

"For the first time this year," he said, "all three of the major branches of construction gained over the corresponding month of last year, and all the gains were substantial. The tremendous July total also helped overcome the weakness which was apparent at the beginning of the year, so that for the first time in July, the year-to-date figure is ahead of the same period of 1957 by 3 percent.

"Despite the recession earlier in the year," Dr. Smith said, "contracts now seem to be well on their way toward a new record in 1958. The recovery continues to have a very broad base, with virtually everything except business spending for commercial and factory buildings going upward.

"Among the most buoyant forces in July contracts were schools, up 20 percent above July, 1957; streets and highways, up 67 percent; residential buildings, up 21 percent; public utilities, up 35 percent; public buildings, up 48 percent, social and recreational buildings, up 34 percent; religious buildings, up 22 percent; and hospitals, up 8 percent.

"Increases in apartment building contracts, up 44 percent, continue to lead the residential upturn, but contracts for one- and two-family houses also rose in July by a substantial 18 percent. The July contracts covered 121,023 dwelling units, a gain of 26 percent over July, 1957, bringing the seven month total to 635,798, or 7 percent ahead of the same period last year."

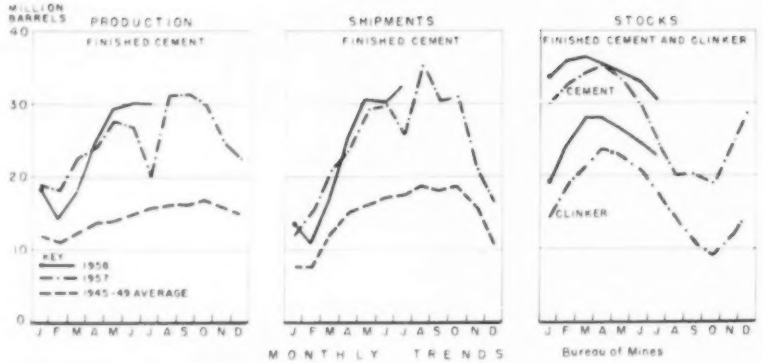
According to the tabulations, which are based on Dodge Reports and supplemental sources, contracts for non-residential buildings in July totalled $1,076,034,000, a gain of 12 percent over July, 1957.

Residential contracts amounted to $1,557,443,000, up 21 percent.

Heavy engineering contracts, at $973,579,000, were up 49 percent.

Total construction contracts for July amounted to $3,607,056,000, a gain of 24 percent over last year.

Cumulative totals for the first seven months of 1958, with percentage changes from the corresponding period of last year, were: non-residential, $6,572,077,000, down 5 percent; residential, $8,057,400,000, up 4 percent; heavy engineering, $5,740,077,000 up 11 percent; total construction, $20,369,554,000, up 3 percent.



SUMMARY—Production of finished portland cement in July, 1958, as reported to the U.S. Bureau of Mines, totaled 29,833,000 bbl., an increase of 47 percent over July, 1957. Mill shipments in July, 1958, totaled 32,2891,000 bbl., an increase of 26 percent compared with July, 1957. Stocks of 30,647,000 bbl. of finished portland cement on hand July 31, 1958, were 26 percent more than those on hand July 31, 1957. Clinker production during July, 1958, totaled 28,240,000 bbl., an increase of 62 percent over the July, 1957, figure.

PRODUCTION—One hundred and sixty-three (163) plants in 37 states and Puerto Rico reported a production of 29,833,000 bbl. of finished portland cement during July, 1958, compared with 20,287,000 bbl. produced in July, 1957.

Production of clinker during the month of July, 1958, was 28,240,000 bbl. compared with 17,457,000 bbl. produced in July, 1957.

High-early-strength portland cement production in July, 1958, of 906,000 bbl. increased 323 percent over the July, 1957, production.

Prepared masonry cement production in July, 1958, totaled 1,308,000 bbl., an increase of 92 percent over the July, 1957, figure.

SHIPMENTS—Mill shipments of finished portland cement for July, 1958, totaled 32,281,000 bbl. compared with 25,655,000 bbl. in July, 1957.

In July, 1958, shipments were higher in fourteen (14) districts and lower in nine (9) districts than in July, 1957. The largest increases were in the eastern states which had been affected by the cement strike in 1957. The greatest decreases were in the western Pennsylvania-West Virginia, Ohio, Michigan, western Missouri-Nebraska-Oklahoma-Arkansas, and Puerto Rico districts.

Mill shipments of high-early-strength portland cement increased 87 percent from 596,000 bbl. in July, 1957, to 1,113,000 bbl. in July, 1958.

Mill shipments of prepared masonry cement in July, 1958, totaled 1,476,000 bbl., an increase of 43 percent over the 1,033,000 bbl. shipped in July, 1957. Over one-half of these shipments were from mills in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. bbl., although they are sold in barrels of varying weights.

STOCKS—Mill stocks of finished portland cement on hand July 31, 1958, totaled 30,647,000 bbl., an increase of 26 percent over the 24,345,000 bbl. on hand July 31, 1957. Stocks of clinker increased 27 percent from the 17,674,000 bbl. on hand July 31, 1957, to 22,506,000 bbl. on hand July 31, 1958.

FIRST SEVEN MONTHS—For the January-July period this year, the volume of production of finished cement amount to 163,579,000 bbl. compared with 157,990,000 bbl. in the same period of 1957. Total shipments for the first seven months of 1958 are reported as 160,319,000 bbl.: in 1957 (January-July period) the total shipments were 154,724,000 bbl.

$3,500,000 Expansion Program For Louisville Cement Co.

Louisville Cement Company's plant at Speed, Ind., is undergoing a $3,500,000 expansion program with the construction of 12 new cement silos and a new $1,500,000 kiln, where limestone and shale will be fused at a temperature of 2,500 degrees.

Construction of the 12 new cement silos became necessary to keep pace with increased production. Upon the completion of the project the plant will have 42 silos, with a total capacity of 500,000 bbl.

Tracks running through the three rows of silos will permit locomotives to pull cars directly to the loading hoppers.

Low Cost, Specification Material FOR ILLINOIS TOLL ROAD

Eagle Washing-Classifying-Dehydrating Section Processes 2400 Tons Per Shift For Elmhurst-Chicago Stone Co., Warrenville, Illinois Plant

The 75 year old Elmhurst-Chicago Stone Company operates a number of plants in northern Illinois successfully using Eagle Equipment. Newest of these plants, at Warrenville, is supplying specification material to the new east-west Illinois Toll Road. About 50% material processed is coarse aggregate and 50% fine aggregate.

An Eagle 36" dia. x 30', Double Log Washer processes gravel from top deck of the top screen —does a fine scouring and abrading job. An Eagle 36" dia. x 25' Single Screw-Coarse Material Washer-Dewaterer processes material from second deck of top screen. Bottom deck is #8 mesh—material retained can be directed to either the Coarse Material Screw or to an Eagle 44" dia. x 32' Double Screw Fine Material Unit. The flume under the Eagle 32' Water Scalping-Classifying Tank makes provision for wasting of excess of certain sand sizes. An Eagle-built Sump recovers water from spray bars on the lower screen, below the log washer and coarse material screw, and recirculates it to the top screen. A highly efficient, economical aggregate plant washing section. Compare Eagle Equipment point by point and you will see why it is ahead in design and a better value. Send for Catalog 58.

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EAGLE IRON WORKS

ENGINEERS AND MANUFACTURERS

133 Holcomb Avenue, Des Moines, Iowa

FACTORY-TRAINED DISTRIBUTORS THROUGHOUT U.S., CANADA

Why Cat Diesels are sand, gravel

The towboat *Iron City*, moving sand and gravel from dredge to plant for the Iron City Sand & Gravel Corp. of Pittsburgh, is 100% Caterpillar powered. Operating on the Monongahela, Allegheny and Ohio Rivers, the craft is 90′ long with a 26′ beam and 8′6″ draft. It is capable of 6 MPH with a full load of 6,000 net tons on 12 barges.

WHEN you make a living moving and processing gravel and rock products, no *one* reason for purchasing a particular power package is enough—too much depends on it. Usually the owners of Cat Diesel Engines can give you a number of reasons why Cat power is best, and they speak from first-hand experience.

Take the towboat *Iron City* for example. The Iron City Sand & Gravel Corp. of Pittsburgh, Pa., powered it 100% with Cat Engines. Says Vice President C. A. Bickel, "We decided on Cat power for the *Iron City* because of our complete satisfaction with the performance of Cat Engines on our dredge—good power, parts availability and service. Also the general reputation of Caterpillar Engines was so good, we felt sure we would experience the same fine results as other owners."

And the H. L. Seabright Company of Wheeling, West Virginia, relying on Cat power for dredging—a D17000, a D13000 and a D375—says this: "We especially like the ease of maintenance and fuel economy of our Cat power plants. . . . We bought Cat Diesels in the first place because of parts availability, service, price, and our fine experience with other Caterpillar equipment." The quotes are by Ralph Brinker, Maintenance Supervisor.

The entire Cat Diesel line is designed for long life under severe operating conditions. These engines are rated to deliver the horsepower advertised—no backing off from the load. This is why you will usually find Cat Engines where there is hard work on a non-automotive application.

If you want reliable power, matched to your load and job conditions—designed to deliver full production, see or call your nearby Cat Dealer for a demonstration.

Engine Division, Caterpillar Tractor Co., Peoria, Ill., U. S. A.

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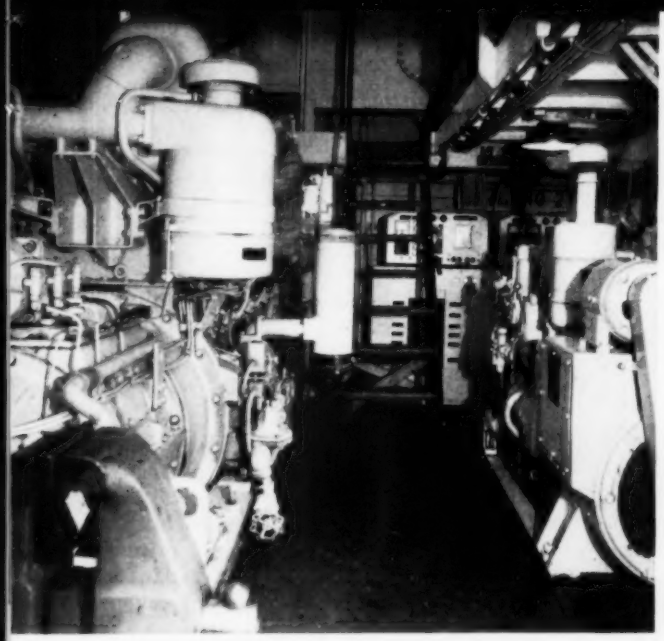
first choice with and rock companies



Two Cat D397s provide propulsion power and two Cat D311 Electric Sets furnish all electric power for the towboat *Iron City* which handles barges of sand and gravel totaling 100,000 tons per month.

On dredging operations near Glendale, West Virginia, the H. L. Seabright Company uses a Cat D375 Electric Set to power a Simplicity and Deming washer; a Cat D13000 Engine to drive a Stedman crusher; and a Cat D17000 Engine to drive a Thomas suction pump. Capacity of this dredge is about 1,200 tons per day. Maintenance Superintendent Ralph Brinker says, "The maintenance of these engines is easy and they are economical to operate. Cat power on our rig has proved very successful!"

ENGINE POWER
BY CATERPILLAR

Enter 26 on card, page 105

One of four Cat D13000 Diesel Engines furnishing power for the Hector Construction Company's crushing operations (Caledonia, Minn.). Regularly operating in four quarries, this company here is preparing 3/4" road aggregate for its own construction road work. Says C. C. Neilsen, secretary: "Our experience with Cat Engines has been outstanding. A D13000 Engine on this crusher has paid for itself many times over in fuel and maintenance savings alone. This kind of long life and low operating cost pays off year in and year out!"

Engine Division — Dept. PQ10
CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

Send me more information about Cat Engines for original power and repowering.

- ☐ Have your dealer call for an appointment. I understand that I am under no obligation.
- ☐ I am interested in learning more in general about these engines.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

One Tractor Better Than Two Atlantic Gravel Co. Discovers

When the management of the Atlantic Gravel Company, Toms River, N. J., recently decided that the firm's one-yard, 2-wheel drive tractor shovel lacked the capacity to handle its expanded production setup, purchase of another tractor of the same type was planned. However, a local equipment distributor, Stewart Equipment Company, was able to convince the management, through extensive on-the-job demonstrations, that a single, larger tractor shovel, with 2-cu. yd. capacity and 4-wheel drive could handle production more efficiently and profitably than the two smaller machines. Seven months of operation has proved this prediction to be true.

In multiple daily operations, the new tractor shovel, a model 154 Trojan, is used in pit loading, rehandling of stockpiled material, plus delivery of aggregate to the feed hopper of a ready-mix plant. In the pit, 20-ton haulage units are loaded in 11 passes, and at the stockpiles, 7-ton trucks are loaded in 3 passes.

Operating records have also indicated economy in fuel and maintenance. On a daily average, the new tractor shovel uses about 15 gallons of standard gasoline, and since its acquisition, no maintenance has been required other than routine oil changes.

Gypsum Depletion Category

In a recent news items appearing on page 23 of the July number of PIT AND QUARRY concerning a Circuit Court of Appeals decision on the percentage depletion rate applicable to gypsum, it was stated that the court held the mineral to be "stone," and was therefore entitled to a 5 percent rate under the Internal Revenue Code of 1939 which governed through 1953.

It should be added that under Treasury Department interpretation of the provisions in the 1954 Revenue Code, gypsum is entitled to the 15 percent depletion rate from January 1, 1954, because it falls within the classification of "all other minerals" specified in Section 613 (b) (6) of the later Code.

Seen loading from the sand stockpile, Atlantic Gravel's new 2-cu. yd. tractor shovel fills a 7-ton dump truck in three passes.

Domestic Ball Clay Production Decreases 11 Percent in 1957

Domestic output of ball clay in 1957 decreased 11 percent in tonnage to 408,286 short tons and 9 percent in value, to $5,521,195 compared with 1956, according to the U. S. Bureau of Mines.

The pottery industry consumed 60 percent of ball clay produced in 1957. Ball clay, used in making whiteware, the major use, decreased 16 percent; that used in floor and wall tile decreased 11 percent.

In 1957, the average value per short ton for ball clay, as reported by producers, was $13.52 compared with $13.25 in 1956.

Open Market Sales of Lime Continue Increase in June

Domestic sales of open-market lime in June (624,393 short tons) increased over the previous month's output, according to reports by released producers to the U. S. Bureau of Mines. Sales of refractory lime increased, but decreases were noted in agricultural, building, chemical, and other industrial lime. (See table below.)

Lime Sold by Producers[1] in the United States, in Specified Periods of 1957-58, by Types and Major Uses in Short Tons

	May	June		January-June	
	1958	1958	1957	1958	1957
By types:					
Quicklime	456,247	462,919	560,424	2,703,574	3,604,539
Hydrated lime	163,347	161,474	161,448	907,375	915,678
Total[2]	619,594	624,393	721,872	3,610,949	4,520,217
By uses:					
Agricultural:					
Quicklime	5,529	4,497	3,750	24,330	28,293
Hydrated lime	15,181	10,441	11,149	73,159	87,942
Total	20,710	14,938	14,899	97,489	116,235
Building:					
Quicklime	11,855	11,804	26,247	62,889	95,799
Hydrated	80,278	80,244	82,706	432,043	435,617
Total	92,133	92,048	108,953	494,932	531,416
Chemical and other industrial:					
Quicklime	319,688	311,690	351,803	1,893,574	2,304,738
Hydrated lime	67,888	70,789	67,593	402,173	392,119
Total	387,576	382,479	419,396	2,295,747	2,696,857
Refractory (dead-burned dolomite)	119,175	134,928	178,624	722,781	1,175,709

[1] Also includes a small quantity of captive tonnage. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

[2] Approximately 60 percent of lime produced is high calcium and 40 percent high magnesium.

C. Glenn Browning Retires From Lehigh Sales Post After 37-Year Career

C. Glenn Browning, executive vice-president of sales, at the Lehigh Portland Cement Company, Allentown, Pa., has resigned from

C. Glenn Browning

his position and will retire at the end of this year.

Mr. Browning has been with Lehigh for 37 years. In 1947, he be-

Ralph Browning

came vice-president and general sales manager. Upon the death of his predecessor, John C. Bowen, he was elected a director in 1954, and was given the title of executive vice-president in 1956.

Ralph Browning, his nephew, who has been with the firm for 21 years, and has held the title of vice-president of sales for six years, will succeed him.

Coplay Cement Company Plans $500,000 Remodeling

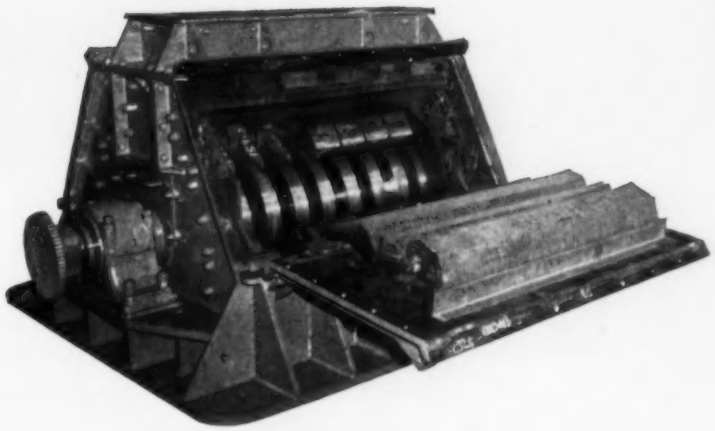
Coplay Cement Manufacturing Company of Allentown, Pa., plans a $500,000 modernization program to remodel the company's two kilns and to install dust collection facilities.

Plant officials stated that tests were still in progress with a high-efficiency mechanical dust collector. More than $75,000 was spent in the last year for dust collection equipment.

Coplay is the nation's oldest portland cement producer, having started operations in 1866.

Cudahy Lime & Cement Company, owned by Tews Lime & Cement Company, Milwaukee, Wis., will move to a new five-acre site. An office, a building materials warehouse, and a ready-mixed concrete plant will be erected.

EASY TO "GET AT"



In a few minutes the top covers on either side of the Pennsylvania Reversible Impactor can be unfastened and swung back on hinges, exposing breaker blocks and liners, and making hammers and rotor assembly handily accessible for inspection, adjustment or repairs. Thus time for maintenance is held way down.

Since the rotor direction is reversible to run clockwise or counter clockwise, hammer turning is eliminated. Patented Adjustable Breaker Blocks enable you to get much longer wear from hammers and blocks, with no variation in hourly tonnage or uniformity of product. To get complete information on the crusher that is preferred by the cement industry two to one over all others for secondary crushing, ask for bulletin 6018.

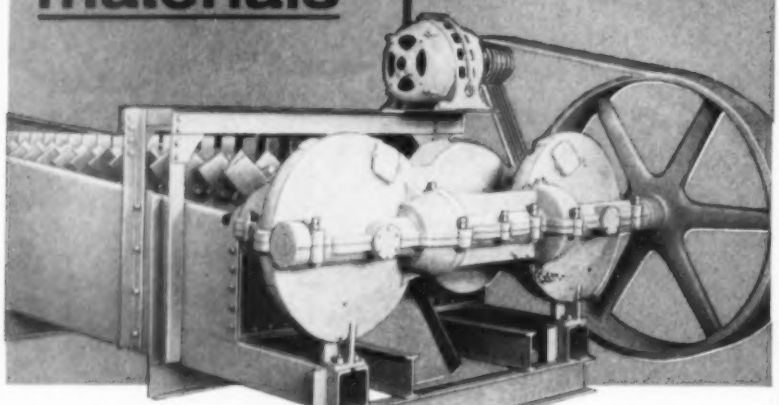
Pennsylvania Crusher Division
Bath Iron Works Corporation
West Chester, Penna.

PENNSYLVANIA REVERSIBLE IMPACTORS

Enter 29 on card, page 105

High Capacities of clean materials

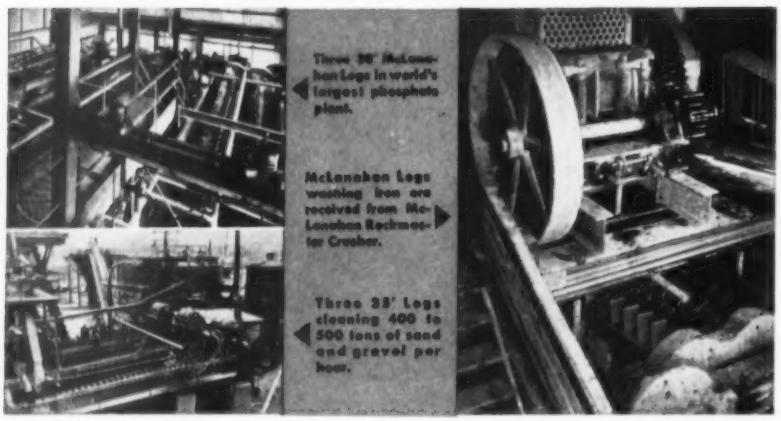
Developed from the world's first all-steel log washers built by McLanahan & Stone in 1894, these machines produce high tonnages of exceptionally clean materials—removing tough clay, soft rock and refuse with unequalled speed and economy. Available in Heavy-Duty and Mudmaster styles. *Write for Bulletins WLO-1155 and MM-755.*



McLANAHAN SINCE 1835

LOG WASHERS

McLANAHAN & STONE CORPORATION
253 Wall Street, Hollidaysburg, Pennsylvania


Three 36" McLanahan Logs in world's largest phosphate plant.
McLanahan Logs washing iron ore received from McLanahan Rockmaster Crusher.
Three 25' Logs cleaning 400 to 500 tons of sand and gravel per hour.

Enter 30 on card, page 105

George F. Coope Retires As Chief Executive Officer Of Potash Co. of America

George F. Coope, president of the Potash Company of America retired on August 1 after 22 years with the firm. F. O. Davis, executive vice-president and treasurer, succeeds Mr. Coope as president.

Before he joined Potash Company of America as executive vice-president, Mr. Coope was assistant general manager of a Chilean nitrate mining and processing operation.

Mr. Davis joined the company in 1936, as controller and has since held the posts of vice-president, treasurer, director, executive vice-president of Potash Company of America, and managing director of Potash Company of America Limited.

Pacific Cement & Aggregates Converts to Natural Gas

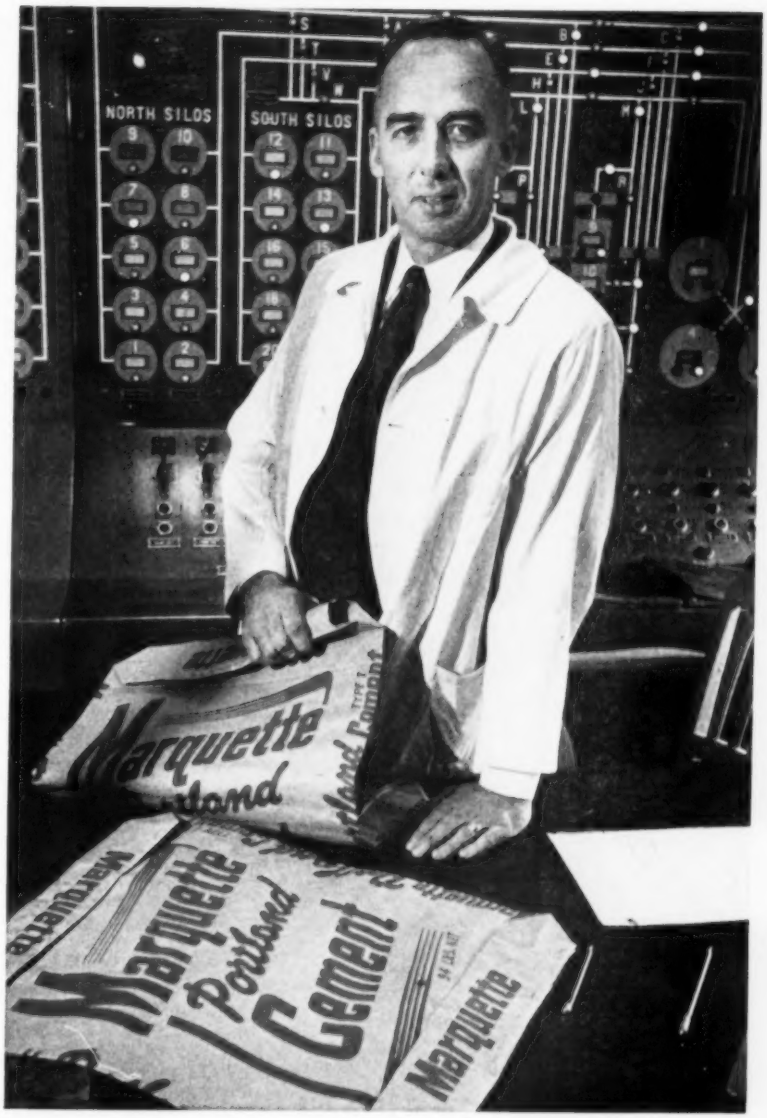
The Pacific Cement and Aggregates plant at Davenport, Calif., has recently completed conversion to natural gas with the installation of a 12-in. pipeline which runs from Santa Cruz to the plant.

Some 13 miles long, the line will bring 8,000,000 cu. ft. of gas daily to the kilns. Cost of the line was estimated at $750,000. Officials of the firm say the transition will have no effect on home-owners since the company can revert to its fuel oil system in case of a gas shortage.

R. K. Humphries, president of Pacific Cement and Aggregates, is shown above with Merle Whitesell, mill superintendent, Art Anderson, general plant superintendent, and Joe Vierra, Cement Workers Union representative, turning on the gas at the new pipeline.

"Bemis STEPPED-END Multiwalls perform a service for our customers . . . and so for us . . ."

SAYS E. E. STORMER, OF MARQUETTE CEMENT MFG. CO.



"The same benefits we encountered by using Bemis STEPPED-END Pasted Valve Multiwalls in our plant operation turned out to be benefits to our customers, too"... says Mr. Stormer, purchasing agent for Marquette Cement. "We like Bemis STEPPED-END Bags because they pack better and stay cleaner. Naturally, our customers are also in favor of cement bags that don't sift and get dusty. Cars stay cleaner and the bags are easier to handle."

Although Marquette officials now consider the use of these bags *primarily* as a service to customers, they still look upon them as a major improvement in their packing operation, as well. Bemis STEPPED-END bags pack better because of the Diamond O construction, stepped corners and the hand insert.

GOT ANY OF THESE PROBLEMS IN *YOUR* PLANT?

- Valve openings stuck closed . . . causing lower production and loss of bags
- Slowed production (up to 25%) due to certain types of valve inserts catching on packing spouts
- Spurting and puffing of cement at corner opposite valve during packing
- Dusty packages on account of leakage from ends and valve opening
- Bags sticking together in bale or pallet, slowing production
- Excessive breakage (more than 1 bag in 1,000 is excessive)

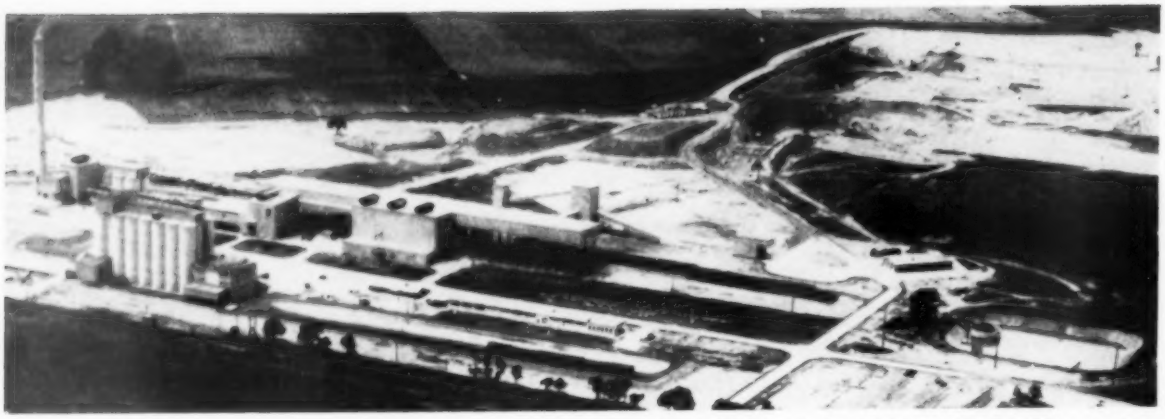
Got any of those problems?
Sure you have . . . maybe all of 'em.

YOU CAN ELIMINATE ALL 6 BY USING *BEMIS STEPPED-END MULTIWALLS.*

Ask your Bemis Man for the *complete* story.

Bemis

General Offices—408 Pine St., St. Louis 2, Mo. • Sales Offices in Principal Cities



Alpha Portland Cement Company's multimillion dollar cement plant at Lime Kiln, Md. (See PIT AND QUARRY, September, 1958, page 95.) Now in full production, the new facility will have a capacity of 2,250,000 bbl. annually. It is the third-largest Alpha plant, and the ninth in the company's network. The plant is located on a 1,000-acre tract of ground containing enough raw material (Frederick limestone) to last for 100 years at peak annual production. It was built by MacDonald Engineering Co., Chicago. Alpha has invested nearly $1,000,000 in a dust control system reported to be among the most effective in the cement industry. Completion of the plant at Lime Kiln climaxes a three-year modernization and expansion program involving an estimated total expenditure of approximately $28,600,000. Alpha's annual production capacity has reached 15,050,000 bbl., up 21 percent since World War II.

'57 Mineral Output Varies Throughout U. S. Possessions

The mineral industry of Puerto Rico set a record high in 1957 estimated at $18.6 million, compared to the previous record of $16.4 million in 1956, according to the U.S. Bureau of Mines.

As of December 1, 1957, over 2 million acres of Puerto Rico were under exclusive prospecting permit to private mining interests, which spent approximately $200,000 on mineral exploration during the year.

Production of cement in 1957 increased as construction activity remained high. Value of cement produced accounted for 86 percent of the total mineral output value.

Clay production in 1957 approximated that of 1956. Clays were used in manufacturing cement, heavy clay products, and studio pottery.

Production of sand and gravel increased in 1957, due to increased construction activity, especially at the military bases. High silica sand was obtained for use by the glass and ceramic industries and as an abrasive for polishing marble.

Output of stone increased in 1957 in line with increased construction activity. Dimension stone was used for construction. Crushed stone was used for construction, paving, and road metal.

In the Canal Zone, production of sand and gravel and stone in 1957 was estimated at 222,000 tons valued at $284,000. Stone supplied 81 percent of the output and 82 percent of the value.

Mineral production for the Territory of Hawaii in 1957 declined about 15 percent in value from the all-time high of 1956. Although the decrease in value was reflected in the output of lime and salt, the stone industry showed the greatest value drop. The major advances displayed in the production of volcanic cinder, clays, and sand and gravel, could not offset this decline.

Mineral Production in Possessions of the United States, 1956-57 (Excerpted from U. S. Bureau of Mines Data)

Possession and Mineral	1956 Short tons (unless otherwise stated)	1956 Value	1957 (Preliminary) Short tons (unless otherwise stated)	1957 (Preliminary) Value
Canal Zone:				
Sand and gravel	40,095	$ 48,673	42,000	$ 51,000
Stone (crushed)	177,250	299,750	180,000	233,000
Puerto Rico:				
Cement (376-lb. barrels)	4,254,701	14,064,982	5,145,000	15,950,000
Clays	142,666	129,166	143,000	130,000
Salt (common)	9,936	101,243	9,000	95,000
Sand and gravel	183,046	191,485	450,000	700,000
Stone	2,076,453	2,555,585	2,375,000	2,675,000
Virgin Islands:				
Basalt	11,591	31,983	12,000	32,000

Mineral Production in the Territory of Hawaii and Pacific Island Possessions, 1956-57 (Excerpted from U. S. Bureau of Mines Data)

Area and Mineral	1956 Quantity (short tons)	1956 Value	1957 Quantity (short tons)	1957 Value
American Samoa:				
Stone (crushed)	2,493	$ 6,505	33,731	$ 37,246
Canton:				
Stone (crushed)	1,620	4,860		
Guam:				
Sand and gravel	18,668	24,437	(1)	(1)
Stone (crushed)	341,072	311,248	1,034,234	1,133,021
Territory of Hawaii:				
Clays	1,590	1,988	2,488	3,110
Lime	9,555	305,709	8,469	270,686
Pumice (volcanic cinder)	58,851	91,695	266,222	492,553
Salt	270	18,119	194	15,239
Sand and gravel	193,149	502,692	286,493	538,432
Stone	3,493,717	6,076,040	2,584,508	4,631,932
Midway:				
Stone (crushed)	203,049	304,574	3,875,001	6,700,000
Wake:				
Stone (crushed)	21,500	21,500	5,000	6,340

NOTE:
(1) Combined with stone to avoid disclosing individual company confidential data.

Enter 33 on card, page 105 →

New Landmarks

In JOHN DEERE Industrial Progress

New industrial-equipment plant, Moline, Illinois

Recent expansion at Dubuque, Iowa, plant

DESIGNED to meet the ever-increasing demand for John Deere Industrial power and equipment are these latest additions to John Deere manufacturing facilities.

The brand-new industrial-equipment plant in Moline expands present extensive facilities for the manufacture of a constantly growing line of rugged, efficient equipment for all types of industry.

Expansion of the Dubuque plant is the John Deere answer to the wide and growing acceptance of John Deere Industrial Wheel and Crawler Tractors and stationary engines.

The two plants combine to supply complete, economical, and dependable earth-moving and materials-handling units to the world's industry.

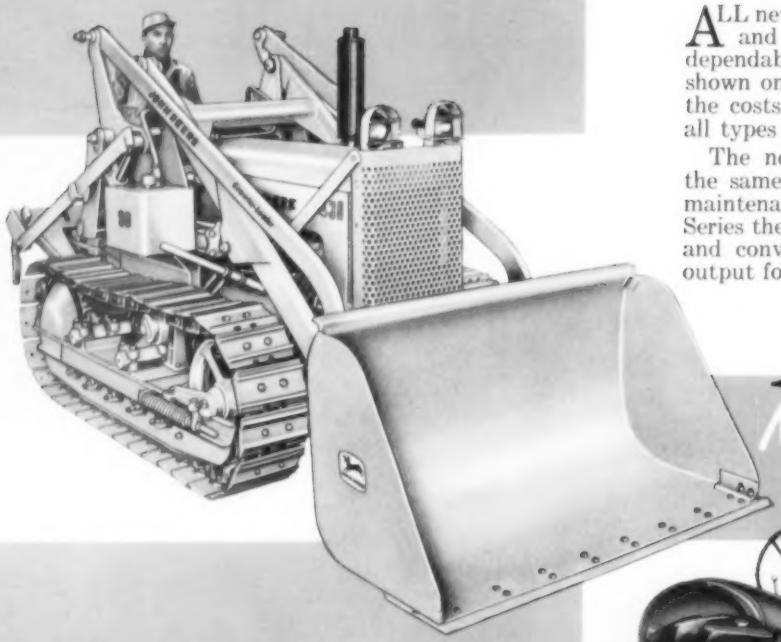
and here is what they mean to YOU

A *Newer* More Complete, CONSTANTLY GROWING LINE of Industrial Power and Equipment...

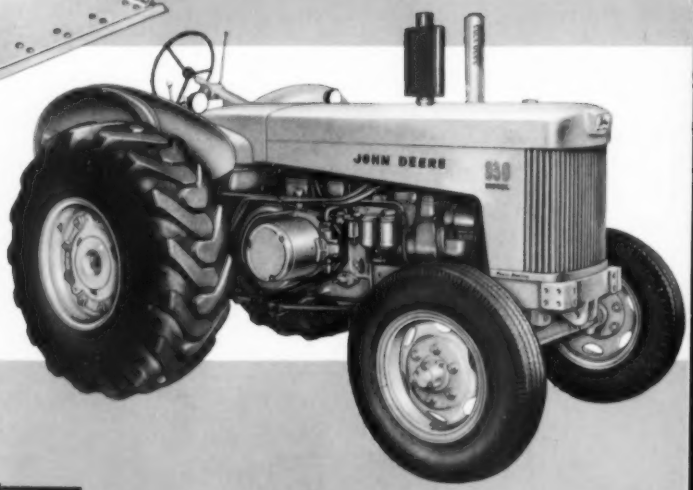
Bringing John Deere Economy and Dependability to All Industry

ALL new . . . all specially engineered for industry . . . and all boasting typical John Deere economy and dependability. The John Deere tractors and equipment shown on these pages are destined to bring still lower the costs of earth moving and materials handling on all types of jobs.

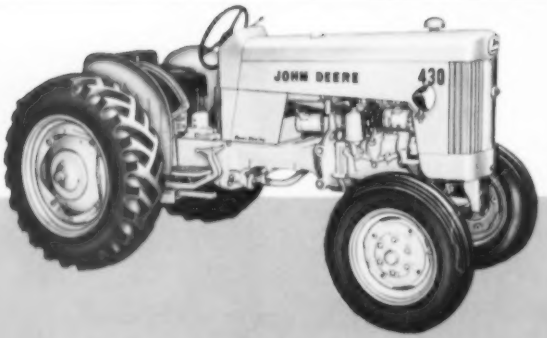
The new "30" Series Industrial Tractors promise the same big saving at the time of purchase and in maintenance and operating cost as the popular "20" Series they succeed—*plus* new operating comfort, ease, and convenience that mean getting still more work output for every man-hour expended.



New **430** CRAWLER AND LOADER



New **830** DIESEL



New **430** and **330** UTILITY MODELS

JOHN DEERE
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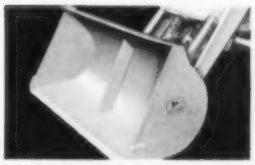
New All-Hydraulic DOZER

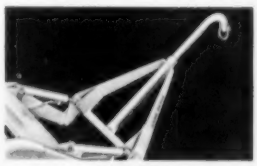
Tilt, angle, lift, and lower with just a touch of the levers. **That's the time- and money-saving story of the all new John Deere Hydraulic Dozer. The first in its classification, this new 64 Dozer assures maximum operating control for precision work, convenience, lower earth-moving costs, and a better, faster job.**

New Loader Attachments

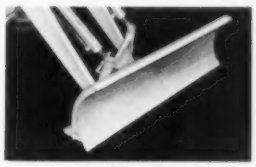
Now—for the time-proved John Deere 71 Loader—a choice of attachments that adapt it perfectly for your particular jobs. Attachments include spill sheet, steel bucket teeth, lifting crane, and materials-handling bucket. Double-acting cylinders of the 71 provide up and down pressure or for operating in float position.



MATERIALS BUCKET



CRANE



BLADE

SPILL SHEET

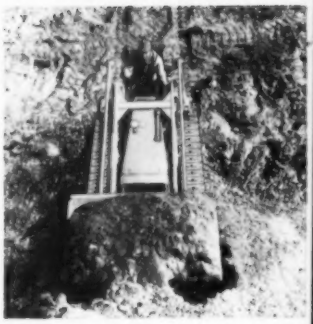
New "840" Diesel for everyday drawbar work.

New "PIGGYBACK" SCRAPER

The new John Deere-Hancock Tractor-Scraper is a full seven-yard elevating scraper that literally lifts material into the bowl. Loading is fast and complete; controlled ejection is positive—even of sticky clay. Fifth-wheel-type of swivel drive permits operation of the elevator even on 90-degree turns, and large diamond-tread tires assure excellent traction.

. . . and there's MORE on the way

Plus.... an already popular line of power and equipment to fit your field of work



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Gentlemen: Please send me information on the items checked below and on the John Deere Credit Plan.

- ☐ Crawler-Loaders
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John Deere Industrial dealers all over the United States and Canada stand ready to help you choose the industrial units most economically suited to your requirements, and to give prompt, efficient service.

JOHN DEERE

Two-Mile Conveyor Belt Hauling Gravel and Clay For Big California Dam

Trinity Dam Contractors have started a three-year task of hauling 20,000,000 tons of selected clay and gravel for the building of Trinity Dam in northern California. In this project they will use nine flights of rubber conveyor belting, extending more than 2 miles down a mountainside.

The conveyor installation, operating from borrow pit to dam site, is made up of 42-in. wide belting manufactured by B. F. Goodrich Industrial Products Company. The belting, traveling at the rate of 650 f.p.m., will carry about 1,400 cu. yd. of fill material an hour.

The conveyor system is now in full-scale operation, according to Trinity Dam Contractors. Partial operation began on June 15 when the belt splicing and installation were completed by B. F. Goodrich field engineers in co-operation with the dam builders. More than 18,000 ft. of conveyor belting is involved in the system.

The huge dam will harness the Trinity River to develop and expand California's natural resources.

The material being hauled to the bed of the Trinity River channel is principally decomposed andesite. Before it enters the conveyor system, the oversize material is reduced to about 6 in. in a pit screening and crushing plant.

In addition to the main downhill conveyor system, B. F. Goodrich Industrial Products Company also furnished the 48-in. wide belting for feeding the screening and crushing plant and the storage conveyors.

On the main conveyor system, the weight of the declining material makes it possible for the belting to generate electric power, which is fed back into the main system.

Conveyor belts No. 4 through No. 9 are shown here carrying gravel and clay down the 850-ft. decline from Pettijohn Mountain to the Trinity River channel. Conveyor No. 9 (foreground) leads to the dam site. All belting in the nine flights is 42 in. wide.

The new Pacific coast headquarters building of the Asphalt Institute, Berkeley, Calif., has been officially dedicated. At a luncheon meeting, J. E. Buchanan, president of the Institute, cited the growth of the asphalt industry in the last decade. Management and technical representatives of member companies attended the meeting.

Highway Contracts Completed Pass $500,000,000 Mark

Construction contracts completed on the national system of interstate and defense highways since July 1, 1956, passed the $500,000,000-mark during July, 1958, according to Bertram D. Tallamy, federal highway administrator.

Figures from the Bureau of Public Roads, U. S. Department of Commerce, showed that construction contracts were completed in July on 184 miles of interstate system at a cost of $66,000,000. Construction contracts on 183 miles, estimated to cost $104,000,000, were awarded in July. Preliminary engineering worth $9,000,000 and right-of-way acquisition estimated to cost $9,000,000 were authorized during the month.

As of July 31, construction was underway on 3,159 miles of the interstate system, at an estimated cost of $1,770,000,000. Construction contracts have been completed since July 1, 1956, on 1,952 miles at a cost of $506,000,000. In addition, $1,500,000,000 has been authorized or spent for preliminary engineering work and acquisition of right-of-way.

In the continuing program of federal assistance for the improvement of the federal-aid primary and secondary highway systems, and their urban extensions (the ABC program), construction was authorized on 1,537 miles during July, at an estimated cost of $96,000,000. In addition, $1,000,000 was authorized for preliminary engineering and $4,000,000 for right-of-way acquisition. Construction contracts were completed on 2,295 miles of these systems during July, at a cost of $117,000,000.

In the special program based on the $400,000,000 of federal aid (D funds) for highways authorized in the Federal-Aid Highway Act of April 16, 1958, to speed up the highway program and stimulate employment, construction contracts on 2,226 miles were awarded during July, estimated to cost $101,000,000. Construction was completed during the month on 11 miles at a cost of $27,000,000. As of July 31, construction was under way on 2,026 miles, estimated to cost $101,000,000.

Distributors, Press Group Shown Latest Equipment By Koehring Co. Divisions

During a recent equipment preview and exhibition staged by the Koehring Company at its proving grounds near Milwaukee, Wis., several new products were demonstrated by the Koehring, Parsons, and Kwik-Mix divisions, and the Ka-Mo department of the latter division.

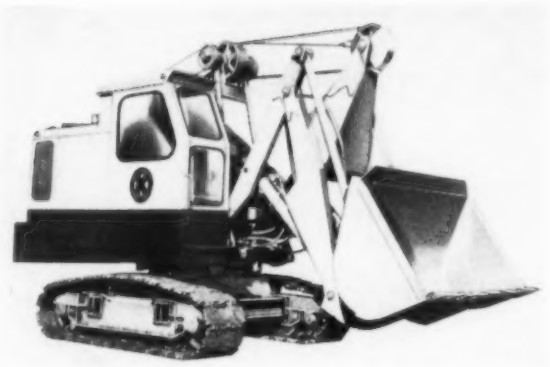
Among the several new models displayed to guests from distributors and the press were the following: Koehring division's recently introduced Skooper; truck and cruiser cranes; the Koehring 545 Sprawler crane with a lifting capacity of 90,000 lb. (11,000 lb. over its own weight); and a substantially greater capacity Dumptor.

Introduced by the Kwik-Mix division were the new Hi-Lifter fork truck, with a three-piece telescopic boom, and the multi-purpose "Moto-Bug" (fork-lift, hopper or platform carrier). An auger-type air-driven drill, one of a series ranging from 2 to 48 in. in diameter, was displayed by the Ka-Mo department of the Kwik-Mix division.

Field demonstrations of the various units were given to point up operating features of the equipment. The Skooper, teamed with the new 10-cu. yd. Dumptor, was shown as a pit excavator working on a sand and gravel bank. The crawler-mounted machine, utilizing an excavator turntable, has a 7-ft. independent crowd action. It can be equipped with 1⅞- to 2½-cu. yd. buckets.

The new Dumptor has a pivoting operator's seat, plus dual steering wheels, throttles, and brake pedals, which allow the operator to drive in either direction without having to turn the unit around. Speeds up to 20 m.p.h. in either direction are possible. Both instantaneous gravity and controlled dump are provided for the dump body, which is fitted with a kick-out pan and has a 65-degree dump angle.

As noted by Julian R. Steelman, president of the Koehring Company, the $1,000,000 display of recently introduced and new models, is an indication of the company's faith in the future. He underlined the firm's belief in the importance of research, and stated that 3 percent of each sales dollar is spent on new product engineering and development. The effect of such a policy, Mr. Steelman added, is apparent in the fact that two-thirds of the firm's shipment dollar volume in 1957 represented products developed in the last 10 years—a period during which total net shipments increased from $16,500,000 to $55,500,000.



Reports on job condition tests have shown the new digging-loading unit capable of loading at the rate of 400 t.p.h. The machine can also be fitted as a ½-cu. yd. backhoe, ¾-cu. yd. clamshell or dragline, or 10-ton crane.

Construction Dollar Value For August $4,800,000,000

The dollar value of new construction put in place rose seasonally in August to a record monthly high of $4,800,000,000—3 percent above a year earlier, according to preliminary estimates prepared jointly by the U. S. Departments of Labor and Commerce. Outlays for the first 8 months of 1958, at $31,500,000,000, were up a little from the comparable 1957 period, but physical volume was probably about the same in both years.

The private total thus far in 1958, amounting to $21,900,000,000, was off only slightly from the same 1957 months, as the drop in industrial building was almost offset by gains in most other types of private work.

Outlays for publicly owned construction, totaling $9,700,000,000, were 6 percent above a year earlier—owing mostly to continued expansion in highways and public housing projects. Federal funds (primarily grants-in-aid to states and localities) accounted for virtually all of the over-the-year increase in the public total. State and local funds, which represent roughly 70 percent of public construction activity, amounted to about the same in both years.

Fluorspar, Fluorine Research Set Up by Bureau of Mines

Four experiment stations and field establishments of the U. S. Bureau of Mines will conduct research on fluorspar and fluorine compounds during the fiscal year 1959, which began July 1.

Laboratory and pilot plant research will continue on methods for producing cryolite, aluminum fluoride, and other fluorine compounds directly from low-grade siliceous or complex fluorine-bearing materials.

Complex barite-fluorspar ores in the southwestern states will be examined and metallurgical research will emphasize development of feasible methods for recovering barite and fluorspar concentrates of commercial quality. Likewise, small-scale pilot plant projects will seek more efficient methods for treating such ores.

Other related research on fluorine will involve development of basic information on the operating characteristics of the lignin sulphonate-sodium fluorite method of flotation for beneficiating complex fluorspar ores found in some eastern and southwestern states.

E. L. Armstrong Takes Post As Public Roads Commissioner

Ellis L. Armstrong, former director of highways for the state of Utah, has been appointed commissioner of the Bureau of Public Roads, U. S. Department of Commerce.

Mr. Armstrong will assist Bertram D. Tallamy, federal highway administrator. The post of commissioner has been open since the retirement of Charles D. Curtiss on December 31, 1957.

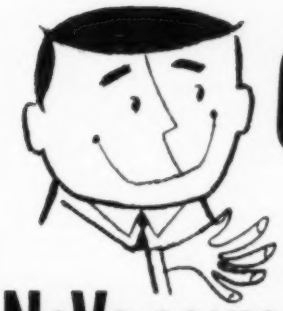
Our Cover Picture

• The front cover picture of this issue of PIT AND QUARRY shows crushed stone being loaded from a new conveyor system into barges at the Tomkins Cove, N. Y., plant of the New York Trap Rock Corporation. A fleet of more than 200 barges transports an average of 6½ million tons of crushed stone annually from four plants on the Hudson to the New York metropolitan area.

Correction

A recent news item in these pages erroneously indicated that Eagle-Picher was moving its diatomaceous earth processing activities from Clark, Nev., to the new plant near Lovelock. Actually, the latter, representing an investment of approximately $2,500,000, is a second operation for the company in that state. It will be engaged solely in the manufacture of high quality filter aid materials, while the diverse production of the Clark plant, in absorbents, paper fillers, lightweight aggregates, etc., will continue unabated. Monthly capacity of the new Lovelock facility has not yet been officially released.

Eagle-Picher's headquarters are not, as reported, in Joplin, Mo., but in Cincinnati, Ohio. However, Joplin is the site of several of the firm's manufacturing operations—currently the company has 23 plants operating in the United States and Mexico—where mineral wool insulations and various chemical products are produced.

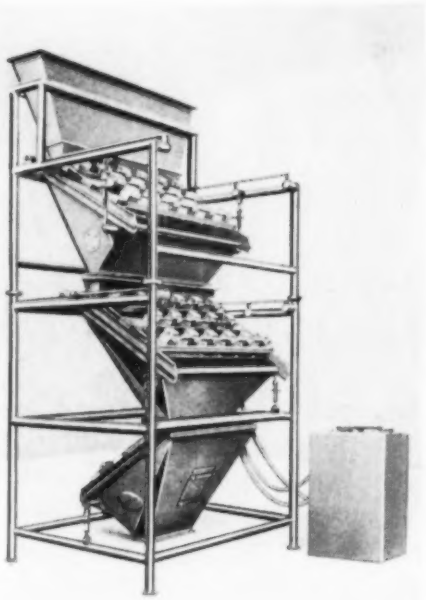


GOOD NEWS

FOR SAND PRODUCERS!

NO BLINDING WITH

NoVo SONIC VIBRATING SCREENS



LET US PROVE IT!

No Lost Production Time Because of Screen Blinding

■

Longer Screen Life Because of No Brushing

■

More Distinct Classifications by Particle Size

■

NoVo Screens Increase Capacity Five to Seven Times with One-Third the Power Requirement

■

Lower Labor Maintenance Cost

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No Costly Installations or Special Foundations

NoVo Sonic Sifting Machines have been tested exhaustively in sand operations and been proven to be the most satisfactory and efficient machines for the job on the market today. NoVo Screens have demonstrated their ability to make sand separations into various particle sizes, while requiring little or no maintenance.

Let us solve your screening problems.
Write for bulletins and catalogues.

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In Canada NoVo Screens are manufactured and sold exclusively by **Ferro Enamel (Canada) Ltd.**, Oakville, Ontario

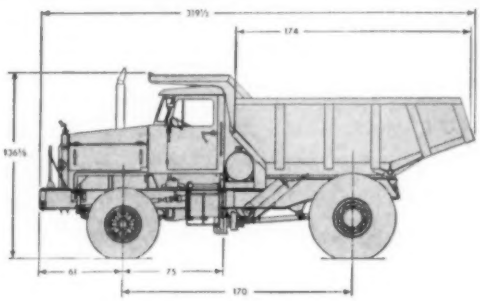
Enter 39 on card, page 105

MACKS FOR EVERY

MACK MODEL LVX

As a 22½-ton rear dumper, the off-highway LVX offers maximum payloads at minimum unit cost. With either a 320- or 335-h.p. diesel engine, an over-gear transmission with two-speed compound or torque converter, and Mack's Planidrive rear axle . . . the LVX is a top performer under all operating conditions. Maximum driver efficiency is assured by such features as ideal steering wheel position, power steering, two-plate air-assisted clutch, and Mack offset cab with extreme left driver position offering maximum view front and rear. From top to bottom, this Mack has the features that have made it the popular "big boy" for heavy construction.

Enter 40 on card, page 105



CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 22½ tons.

DIESEL ENGINES: 320 h.p., supercharged Cummins; 335 h.p., turbocharged Cummins.

TRANSMISSIONS: Mack, selective, constant mesh, 8 speeds forward, 2 reverse; converter and Mack 4-speed transmission; Torqmatic converter and transmission.

CLUTCH: Mack two-plate, air assist with manual actuation.

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gears within wheel hubs.

BRAKES: Full air, with 12 cu. ft. compressor.

FRAME: Alloy steel, wide flange I-beam.

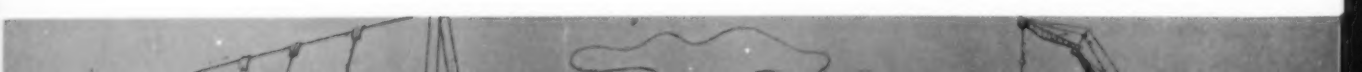
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Front, 14.00-24 (16P) rib or 14.00-24 (20P) rib; rear, 18.00-25 (24P) lug.

WHEELS: Cast, spoke.

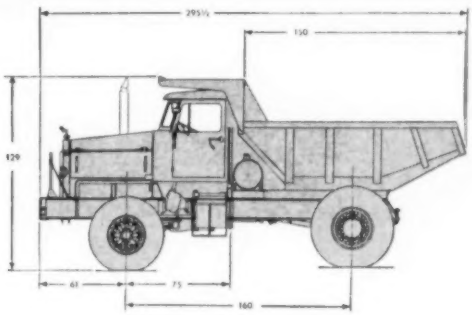
STEERING: Hydraulic power steering, 62' turning circle diameter.

DUMP HOIST: Twin, double-acting, outboard mounted, three-section telescopic cylinder assembly, providing 70° dumping angle.



CONSTRUCTION JOB

excavating...
filling...
equipment hauling



CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 15 tons.

DIESEL ENGINES: 172 h.p., naturally-aspirated Mack Thermodyne; 220 h.p., naturally-aspirated Cummins; 205 h.p., turbo-charged Mack Thermodyne.

TRANSMISSION: Mack, selective, constant mesh, 10 speeds forward, 2 reverse.

CLUTCHES: Mack single-plate, 253 sq. in. engagement (for 170 h.p. Mack Thermodyne); Mack two-plate, 416 sq. in. engagement for other sizes.

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gear train within wheel hubs.

BRAKES: Full air, with 12 cu. ft. compressor.

FRAME: Wide flange, rolled section I-beam.

SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Front, 12.00-24 (16P) rib, 13.00-24 (18P) rib; rear, 14.00-24 (18P) lug, 16.00-25 (20P) lug.

WHEELS: Cast, spoke.

STEERING: 60′ turning circle diameter.

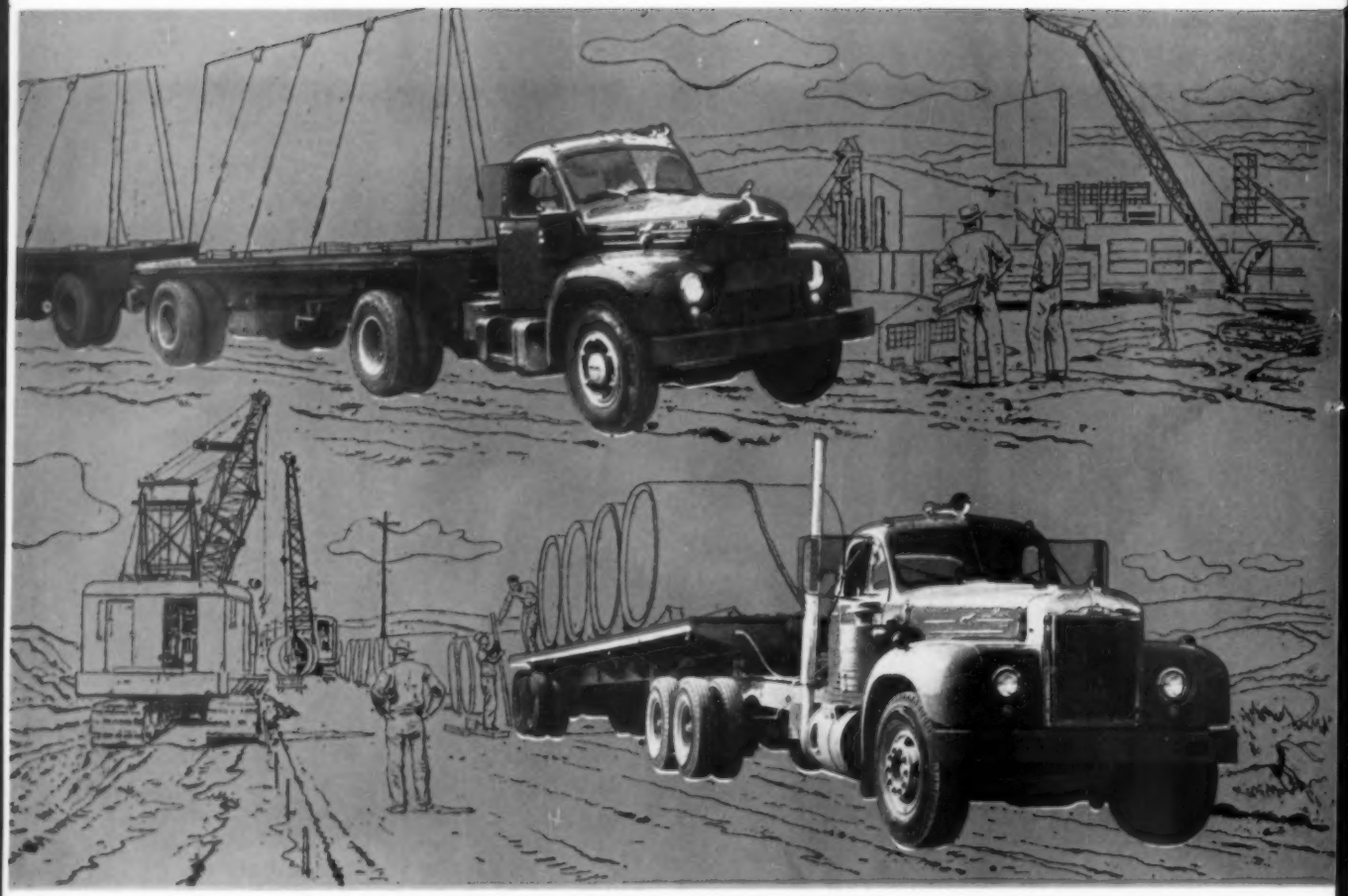
DUMP HOIST: Twin, double-acting, 8″ cylinders providing 70° dumping angle.

MACK MODEL LRX

The 15-ton LRX offers outstanding maneuverability with off-highway stamina and capacity. Powered with either a Mack or Cummins diesel engine and equipped with a Mack ten-speed transmission and Planidrive rear axle assembly, the LRX is an efficient performer on long hauls as well as steep grades. Powerful air brakes, carefully engineered cab, and rugged unified frame assembly have long made the LRX a popular model for earth or rock hauling.

For capacities of 30 tons or more where maximum flotation is required, a full line of tandem rear axle Macks is available.

Enter 41 on card, page 105

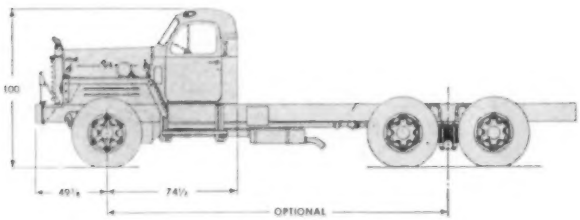


MACKS FOR EVERY

MACK B-80 SERIES

B-80 tractors for heavy-duty flat bed and dump trailer hauling, and B-80 truck chassis for large capacity dumper, mixer, and stake body operations have run up an unequaled record for economy and dependable service in all phases of construction work. Available in four- and six-wheel models including six-wheel drive models, B-80's are powered with 170 to 232 horsepower Mack Thermodyne gasoline or diesel engines, or with Cummins diesels in the 220 to 320 horsepower class.

Enter 42 on card, page 105



CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 6 to 12 cubic yards; mixer, 7½ to 8½ cubic yards (6-wheelers) (larger with special provision).

ENGINES: Gasoline: Mack Thermodyne, 232 h.p. Diesel: Mack Thermodyne, 170 h.p., 205 h.p., with turbocharger. Cummins, 220 h.p.; 320 h.p., with supercharger.

TRANSMISSIONS: Mack: Five-speed, direct or overgear. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Five-speed and auxiliary, with or without tower power take-off. Availability contingent upon chassis models.

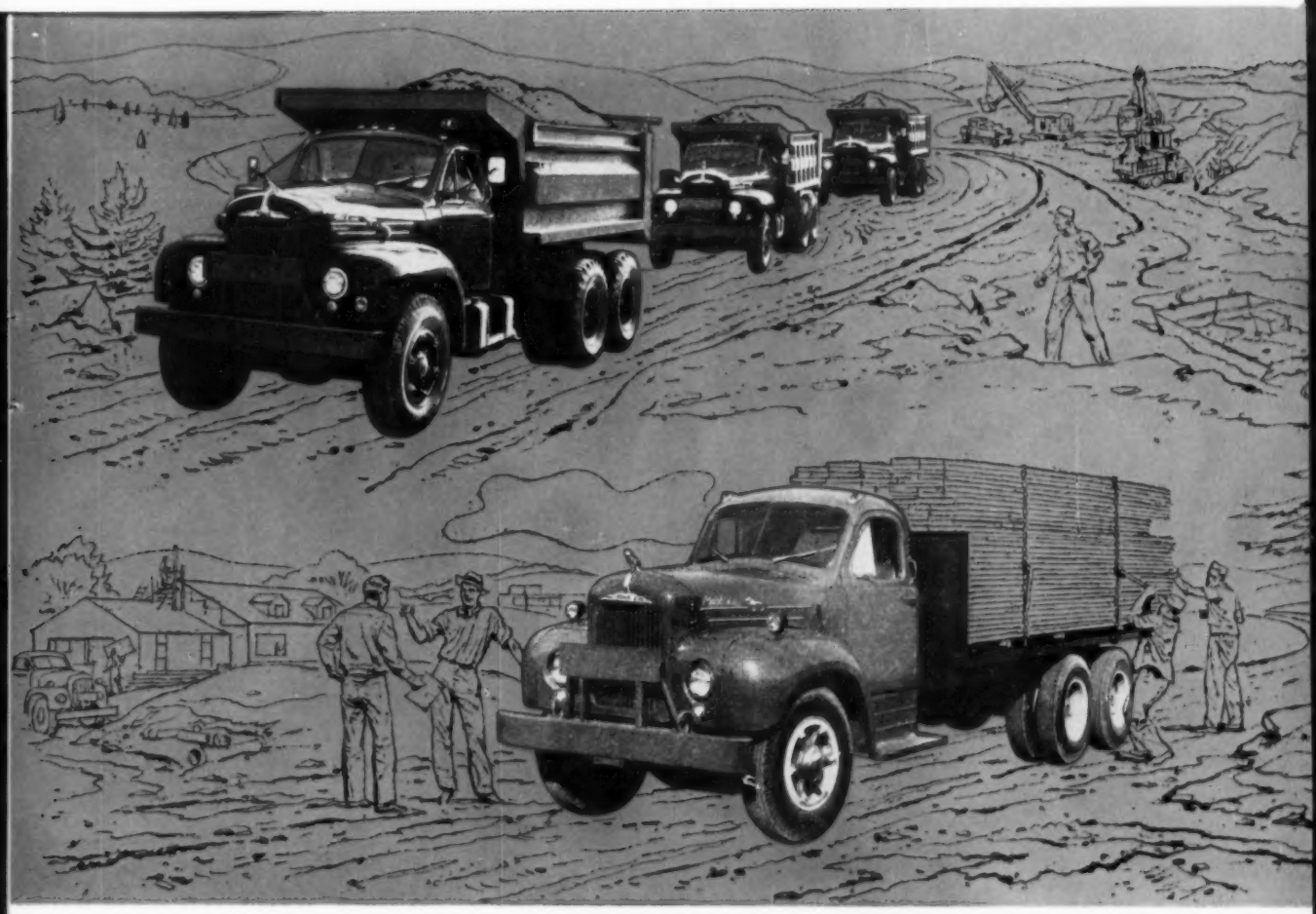
FRONT AXLE: Mack, heavy-duty, drop-forged I-beam. Mack, front wheel drive, for 6x6 chassis.

REAR AXLES: Four-wheelers: Mack Dual Reduction, with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, interaxle Mack Power Divider.

FRAME: Channel: Alloy-steel, heat-treated; channel reinforcement, standard.

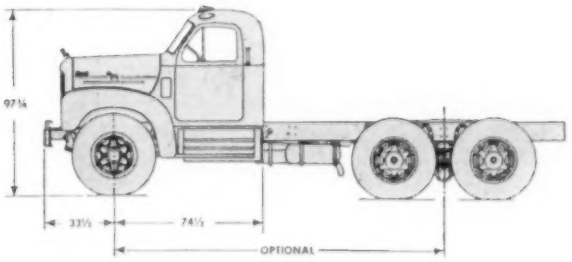
TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler); 11.00-22, 11.00-24, 12.00-24 (Six-wheeler). Size availability contingent upon bogie.

STEERING: Hydraulic-power steering (optional extra).



CONSTRUCTION JOB

aggregate and materials hauling



CONDENSED SPECIFICATIONS

PAYLOADS: Rear dump, 6 to 12 cubic yards; mixer, 5½ to 7½ cubic yards (6-wheelers).

ENGINES: Gasoline: Mack Thermodyne, 185 h.p. Diesel: Mack Thermodyne, 170 h.p.; 205 h.p. with turbocharger.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and twenty-speeds both "On" and "Off" Highway types. Five-speed and auxiliary, with or without tower power take-off; ten-speed and auxiliary. Availability contingent upon chassis models.

FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Three available sizes.

REAR AXLES: Four-wheelers: Mack Dual Reduction—with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, interaxle Mack Power Divider. Three bogie sizes available.

FRAME: Channel; Alloy-steel, heat-treated, pressed; channel reinforcements for maximum services (standard or optional extra).

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler). 10.00-20, 10.00-22, 11.00-20, 11.00-22, 11.00-24 (Six-wheeler). Size availability contingent upon bogies required.

STEERING: Hydraulic-power type (optional extra).

MACK B-60 SERIES

As dumpers, mixers, tractors, and flat-bed trucks, Mack B-60's are the acknowledged workhorses of contractors everywhere because of their dependable and efficient performance for a wide range of jobs. They are powered with Mack Thermodyne gasoline or diesel engines in either the 170 or 205 horsepower range. Both four- and six-wheel units are available. Six-wheel models use the exclusive Mack Balanced Bogie with interaxle Power Divider, the sure-footed drive that directs power more to the wheels having the greater traction.

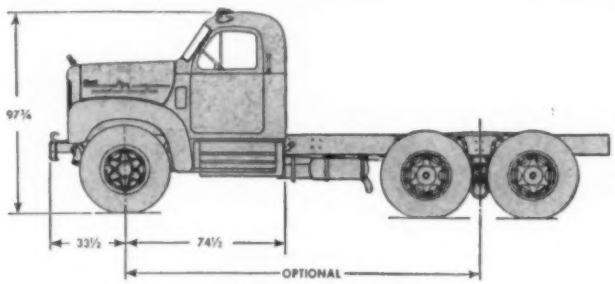
Enter 43 on card, page 105

MACKS FOR EVERY

MACK B-40 SERIES

Available in four- and six-wheel models including six-wheel drive models, the B-40 series, slightly smaller than the B-60's, is especially valued for its bonus capacities, handling ease, and economical operation. B-40 dumpers, tractors, mixers, and flat-bed trucks use either Mack 150-horsepower Thermodyne diesel or Magnadyne gasoline engines. Like all Macks, the B-40 series is engineered and built with precision and thoroughness . . . your assurance of dependable and cost-saving operation.

Enter 44 on card, page 105



CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 5 to 10 cubic yards; mixer, 5½ to 6 cubic yards (6-wheeler).

ENGINES: Gasoline: Mack Magnadyne, 150 h.p. Diesel: Mack Thermodyne, 150 h.p.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and twenty-speeds, both "On" and "Off" Highway types. Five-speed and auxiliary, with or without tower power take-off. Availability contingent upon chassis models.

FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Four sizes. Mack, front-wheel drive (for 6x6 chassis).

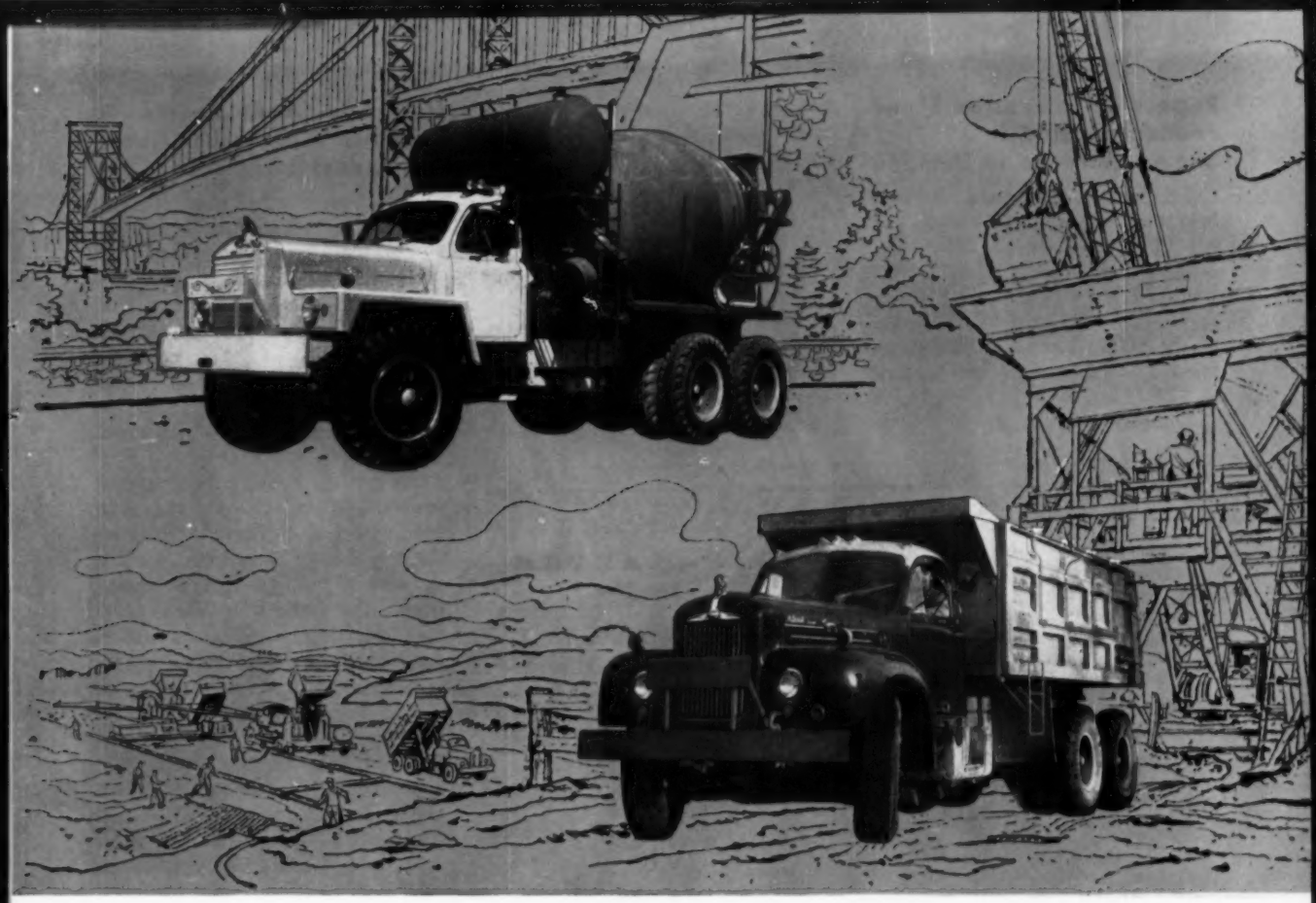
REAR AXLES: Four-wheelers: Mack Dual Reduction. Six-wheeler Bogie: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider.

FRAME: Channel: Alloy-steel, heat-treated, pressed; appropriate inside channel reinforcement (standard or optional extra).

TIRES: Available sizes and types: 10.00-20, 11.00-20, 11.00-22 (Four-wheeler). 8.25-20, 9.00-20, 10.00-20, 10.00-22, 11.00-20 (Six-wheeler). Availability contingent upon chassis.

STEERING: Hydraulic power steering (optional extra).

Illustrations are not necessarily representative of standard specifications.



CONSTRUCTION JOB

concrete, dry-mix, and asphalt hauling

ONLY MACK OFFERS ALL THESE PROFIT-POWER FEATURES

A truck or tractor for every construction job. Dumpers, concrete mixers, tractors, flat-bed trucks—there are dependable, economical Macks for every important construction task . . . right up to the biggest. Moreover, when you standardize on Macks, you gain the added savings of a completely integrated parts and upkeep operation.

Widest choice of engines. To meet your needs exactly, Mack offers a choice of proved, dependable engines in every power range: Mack Thermodyne® diesel or Mack gasoline engines at 150 h.p. . . . Mack Thermodyne diesel, Mack gasoline or Cummins diesel units in the 170-232 h.p. range . . . and Cummins diesels from 250 to 450 h.p.

Unequaled performance and economy. Every Mack is fashioned from the finest, most durable materials . . . crafted to the highest standards of strength, stamina and precision in the industry. Mack controls this quality by making more of its own major components—engines, clutches, brakes, transmissions, bogies, cabs, etc.—than any other maker. Every Mack is engineered for fast, simple accessibility. And every Mack is "Built like a Mack"... made to outlast, outwork, and outearn anything else on demanding jobs.

Parts and service wherever you operate. Mack has spared no effort or investment to provide every Mack owner—everywhere—with the fullest parts-and-service coverage. There is a Mack branch or distributor close to your job who carries *nearly* any part you'll need on the job . . . and behind them are Mack parts depots that can ship out *any* replacement part at a moment's notice.

MACK
first name for
TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey
In Canada: Mack Trucks of Canada, Ltd.

Report on Dimension Stone Produced, Sold in 1957 Shows Increase in Demand

The dimension stone industry operated 487 plants in 42 states and two U. S. territories in 1957. The output of dimension stone (exclusive of slate) in the United States in 1957, as reported by producers to the U. S. Bureau of Mines, totaled 2,515,000 short tons, valued at $77,424,000.

Dimension stone in 1957 continued to find its main use in the construction of buildings. Demand for house veneer appeared to be gaining favor in some sections of the country; especially keen was the demand for rustic stone.

Memorial stone sales totaled nearly 3,000,000 cu. ft., valued at about $19,000,000. Increases of 5 percent in tonnage and value were noted over 1956. Georgia and Vermont were the major producing states in 1957.

BRUNNER & LAY

ROK-MASTER

5-in dia for use with "Quarry-Master" drill

BRUNNER & LAY

HOLE-MASTER

6-6½-7-in for use with "down-the-hole" drill

STAY SHARP LONGER

Build Profitime • Cut Downtime!

You end costly drilling delays when you switch to these Brunner & Lay 6-6½-7-in bits. Special process gives more insert life with unusual resistance to wear and shock. You get more footage per grind, less steel handling, more output, less cost. For a demonstration, or more information, call your dealer or our nearest plant. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. 75 progressive years. Plants & warehouses: Philadelphia, Asheville, Birmingham, Dallas, Albuquerque, Denver, Los Angeles, Sacramento, Portland, Seattle, Lachine, P.Q.

Write for this NEW bulletin DA 1-58 on your letterhead, stating your position

Brunner & Lay carbide Master bits available in sizes mentioned above. Our Rok-Bits in 1,000; 700; 600; 400; 200; J5.23; J5.5; J7.50 and standard wagon and hand held drill threads—in wide size range—in these body types—cross, chisel, "X", cutaway and taper socket.

Brunner & Lay Products

CARBIDE ROK-BITS • INTRA-SET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL

Enter 46 on card, page 105

New Equipment Shown By Ford Tractor Division For Industrial Market

At a recent equipment preview held by the Tractor and Implement Division of Ford Motor Company at Birmingham, Mich., an entirely new line of industrial tractors, plus accessory high-capacity digging and loading equipment, were demonstrated to several hundred representatives of nationwide distributors, industrial dealers, and press groups.

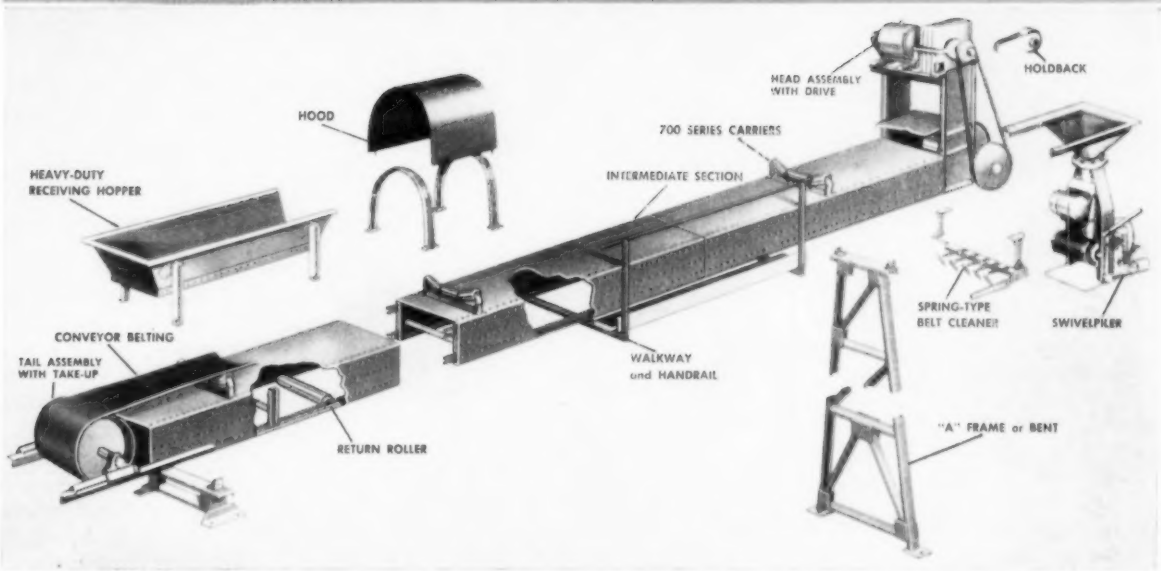
Larger and heavier than current general-purpose models, the new industrial tractors have a substantially increased front axle capacity as well as a rugged new design frame. The new tractor-loader combinations were demonstrated to have double the lifting capacity of previous industrial models.

As pointed out by L. E. Dearborn, general sales manager, the requirements of purely industrial equipment for different types of service facilities, stocks, and trained personnel as compared with farm equipment, has led to the development of a new industrial sales agreement. The latter will be put into effect by the Tractor and Implement Division through the distributor organization. It was added that industrial dealers will be located at strategic points throughout the United States, Canada, Cuba, Mexico, and the Hawaiian Islands.

The new tractors are now on the production line at the plant in Highland Park, Mich., and accessory equipment will shortly go into production at the Des Moines, Iowa, implement plant. Equipment specifications will be made public in the near future.

Universal Atlas Cement Company, Union Supply Company, and Homewood Stores Company, wholly owned subsidiaries of the United States Steel Corporation, have become divisions of the parent company. It was disclosed by Clifford F. Hood, president of the corporation, that general and district offices of these new divisions will continue at their present locations, and there has been no change in sales policies or practices as a result of the change in corporate structure.

NOW STEPHENS-ADAMSON COMBINES ITS QUALITY CONVEYOR COMPONENTS INTO A Pre-Engineered SECTIONAL BELT CONVEYOR



ALL NEW . . . NO OTHER COMPETITIVELY PRICED PACKAGED CONVEYOR LIKE IT! EXCLUSIVE ENGINEERING FEATURES ASSURE POSITIVE SATISFACTION

Here in one competitively priced, complete packaged unit is the efficient, economical and dependable answer to your conveying needs. The combination of STEPHENS-ADAMSON exclusive bent-plate decking, new pulleys with revolutionary crown, and quality conveyor components assure easy erection, maximum flexibility and minimum maintenance cost. Four high-strength bolts fasten head assembly . . . eight bolts join intermediate sections . . . six bolts connect tail assembly offering simplified conveyor erection and alteration. More for your purchasing dollar today . . . more for your conveying dollar tomorrow!

Bent-Plate Decking—Punched every eight inches in rows on top, bottom and along its sides; the sturdy, 12 foot sections of steel decking provide many advantages over conventional truss-type construction. In addition to simplified erection and ease of alteration of conveyor, the decking provides protection for return belt run. Return rollers are mounted on underside, shielded from falling material.

- **STEPHENS - ADAMSON Pulleys** — Revolutionary new crown providing more belt training effect with less belt stress . . . featuring new all-steel S-A "Squeezelock" Hub.
- **STEPHENS-ADAMSON 700 Series Carriers** — Precision ball bearing carrier rollers (4" or 5") assure smooth, trouble-free performance. Roller bearing carriers optional.
- **SEALMASTER Self-Aligning Ball Bearing Units** — Performance proven in countless conveyor installations.
- **SACO Speed Reducer** — Rugged, compact, quiet unit... famous for dependability.
- **STEPHENS-ADAMSON Spring-Type Belt Cleaner**—Wipes belt clean of wet or dry materials. Simple to install, adjustable, saves belt, eliminates clean-up maintenance.
- **STEPHENS-ADAMSON Holdback** — Easily mounted on headshaft to prevent belt reversal. Protects equipment and personnel.
- **STEPHENS-ADAMSON Swivelpiler** — Extends reach of conveyors tenfold through centrifugal thrower principle.
- AVAILABLE IN 18", 20", 24", 30" and 36" width conveyors . . . Delivered from stock!

STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.
SA

WRITE FOR BULLETIN 458

GENERAL OFFICE & MAIN PLANT:
20 RIDGEWAY AVE. — AURORA, ILL.

PLANTS AT: CLARKSDALE, MISSISSIPPI * LOS ANGELES, CALIFORNIA * BELLEVILLE, ONTARIO

Operator using the new torch to cut away zinc grouting material which secured the manganese plates to the crusher bowl housing. Scaffolding was used to lower workers into the large crusher bowl.

Columbia-Southern Chem. Dismantles Crusher Liners With Special Cutting Tool

A new cutting torch, designed originally for shipyard fabrication applications and now commonly used for production metal removal, as well as maintenance jobs, proved its efficiency in a difficult test at the Columbia - Southern Chemical Corporation plant at Fultonham, Ohio, not long ago.

In dismantling a 50-in. Worthington crusher for removal to a new location, personnel of George P. Dysart, Incorporated, steel erection firm of Columbus, Ohio, hit an apparently insurmountable snag when it was discovered that the crusher bowl, over 30 ft. in diameter and lined with heavy manganese plates measuring approximately 28 in. x 24 in. x 6 in. thick, had been fabricated for permanence. Arc cutting electrodes were unable to dislodge the several hundred manganese plates which had been grouted in place with zinc.

At this point, a welding equipment manufacturer's representative suggested an Arcair Torch. Manufactured by the Arcair Company, Lancaster, Ohio, this new tool uses the melting power of an electric arc in combination with a jet of compressed air paralleling the electrode to blast the molten metal out of the way.

A model H-3 general-purpose torch with 3/8-in. Arcair "Copperclad" electrodes was selected for the crusher job. Power was supplied by a 400-amp. Lincoln welder, and air by a 105-c.f.m. Jaeger "Air Plus" portable field compressor. This combination successfully cut and removed the zinc securing the manganese plates.

New P.C.A. Film Depicts Road Program Planning

People and Movement, is the title of a film recently premiered by the Portland Cement Association. Produced as a public service, the 17-minute sound and color film is aimed at increasing the public's understanding of the planning behind the great new highways now being built across the nation as part of the national system of interstate and defense highways.

The film discusses the changes in America's population and how these changes are affecting land use and movement in urban, suburban and rural areas of the nation. Photography from all over the country shows super expressways — the new-type roads of tomorrow now under construction—redevelopment models, slum clearance projects and rural industrial developments.

Available through the Portland Cement Association's 32 district offices, the film is intended for showing to civic groups, schools, service organizations and other interested audiences.

A $600,000,000 mineral subsidy program, designed to encourage domestic production and protect U. S. miners from lower-cost imports, has been approved by the House Interior Committee. The bill covers fluorspar, lead, zinc, tungsten, and related minerals.

Production Record Set in '57 In Crushed and Broken Stone

Another record was established in 1957 in crushed and broken stone production. Total output in 1957 as reported to the U. S. Bureau of Mines reached a new high of 536,000,000 short tons, valued at $746,000,000, compared with 504,000,000 tons, valued at $689,000,000 in 1956.

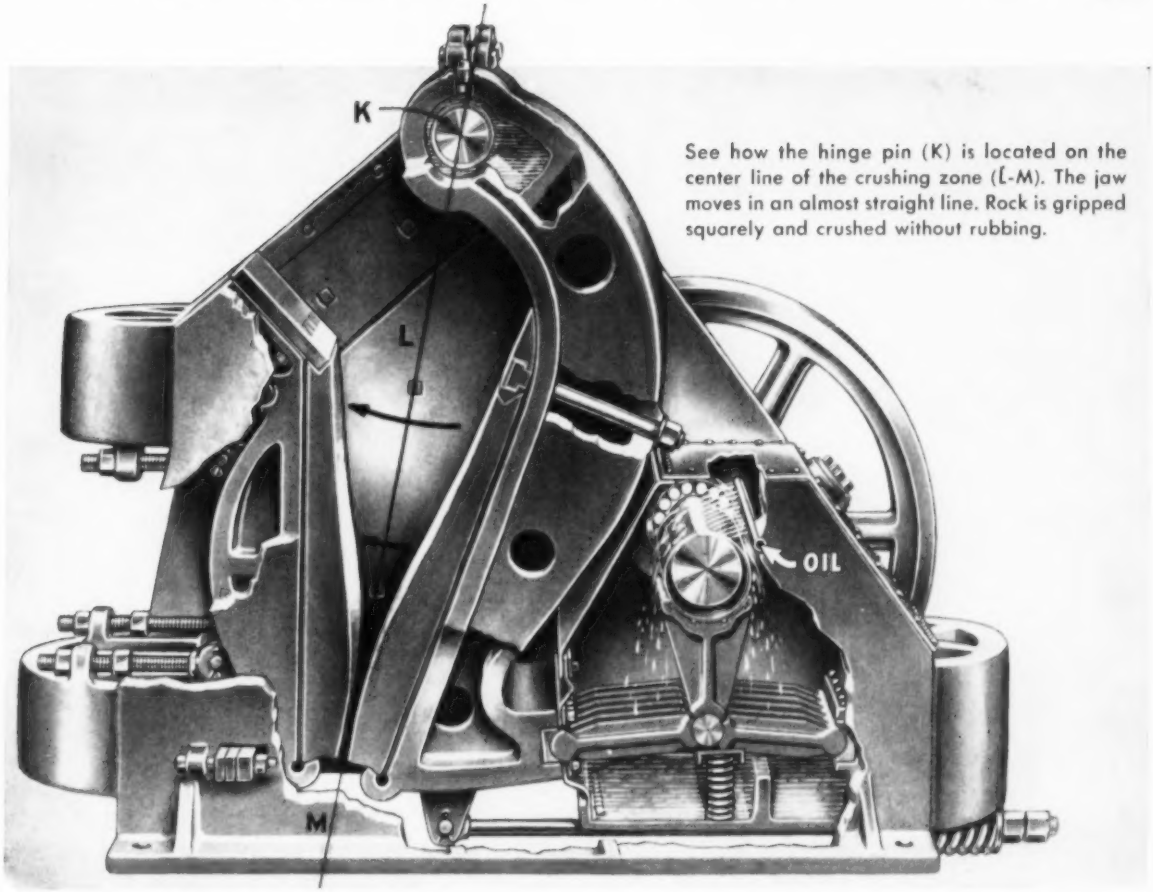
As in previous years, the production in 1957 included crushed stone used for concrete aggregate, roadstone, cement, lime, metallurgical flux, railroad ballast, refractory stone, agricultural limestone, abrasives, and riprap, and in various chemical and other manufacturing processes. Asphaltic stone and slate granules and flour are excluded in this total, but nearly 2,000,000 tons of calcareous marl for use in cement manufacture and agricultural applications were included.

Over half the production of crushed and broken stone went into concrete and roadstone applications, and nearly 90 percent of the aggregates produced for these purposes came from commercial operations. The federal highway program began to absorb substantial tonnages, as did a number of dam construction projects. Consequently the production of concrete and roadstone materials increased nearly 10 percent over 1956.

Portland and natural cement production consumed 15 percent (80,000,000 tons) of the total crushed and broken stone in 1957, a decrease of 8 percent in tonnage compared with 1956. Limestone and calcareous marl used in agriculture accounted for 4 percent of the total. In addition, a small quantity of shell was used in agriculture. Furnace flux (39,000,000 tons) accounted for 10 percent of the total limestone produced in 1957 and increased 4 percent in quantity and 7 percent in value over 1956.

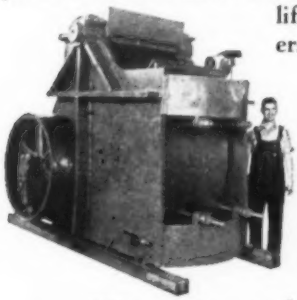
Sahemi Cement Company, near Meshed, Iran, is now producing portland cement. Capitalized at approximately $789,000, the company has the only portland cement producing plant in the Yanbolak district. Cost of the plant and installations was about $1,052,600.

KUE-KEN® takes the cost out of hard-rock crushing . . . jaw plates last at least 5 times longer



See how the hinge pin (K) is located on the center line of the crushing zone (L-M). The jaw moves in an almost straight line. Rock is gripped squarely and crushed without rubbing.

Rubbing, the main cause of premature jaw plate wear, is eliminated in Kue-Ken crushers by "crushing without rubbing". Gripping rock firmly and crushing squarely, Kue-Ken jaw plates are subjected to minimum abrasion giving them far longer life than any other crushers. Power consumption is less as it is not wasted in wearing out jaw plates. Kue-Ken mechanism operates in a sealed, dust-free crankcase lubricated by filtered oil to permit higher speeds for greater capacity and a more uniform product. Wear is negligible and shutdowns common to conventional crushers are practically eliminated. Automatic flywheel release prevents breakage from tramp iron. Kue-Ken crushes at the lowest cost per ton. There is a size to meet every need.



Write for catalog

KUE-KEN® CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8385 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

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SEATTLE, WASH.	Washington Machinery Co.
VANCOUVER, B. C.	Universal Equipment Co.
SALT LAKE CITY, UTAH	Lund Machinery Co.
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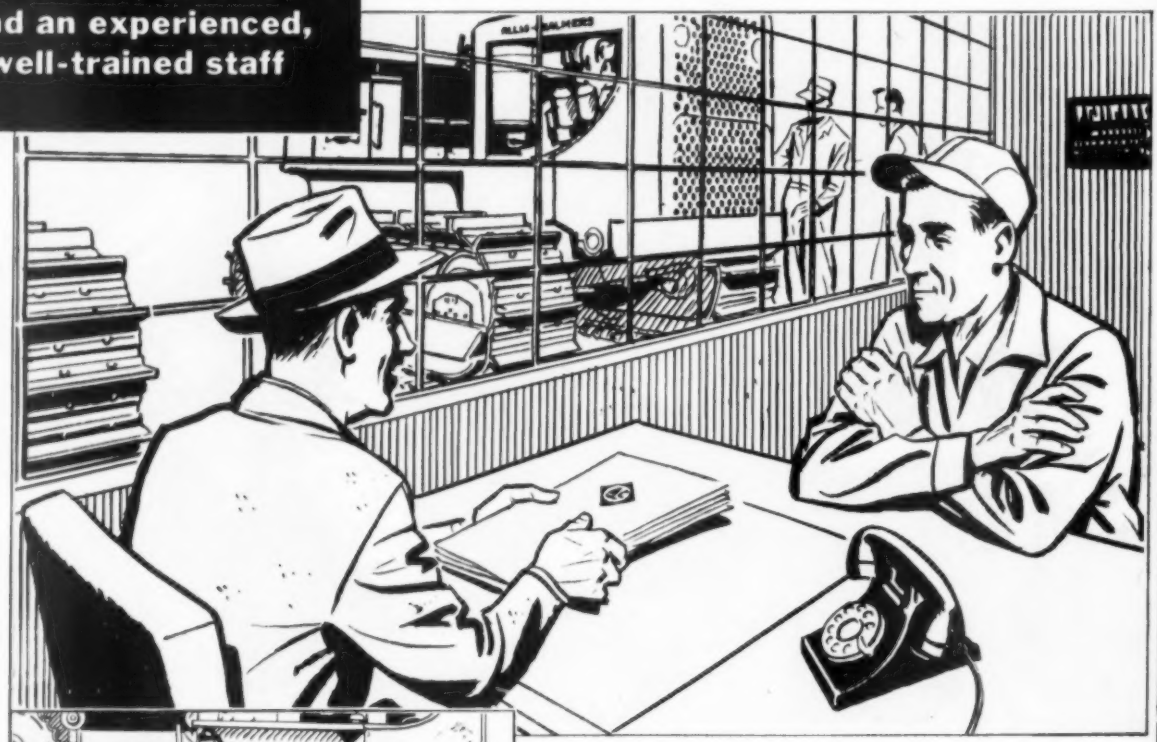
PORTLAND, ORE.	Contractors Equipment Co.
LOS ANGELES, CALIF.	Garlinghouse, Fremon Co.
BERKELEY, CALIF.	West Coast Engine & Equip. Co.
PHOENIX, ARIZ.	Stapley's

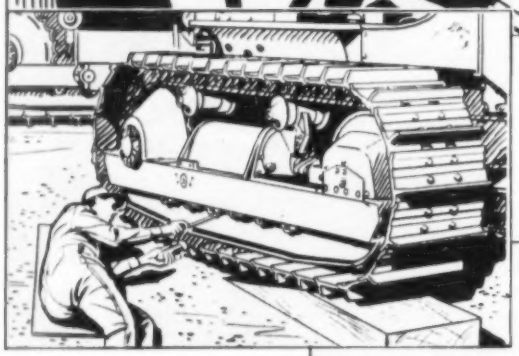
Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

Your Allis-Chalmers dealer

...backed by modern facilities and an experienced, well-trained staff

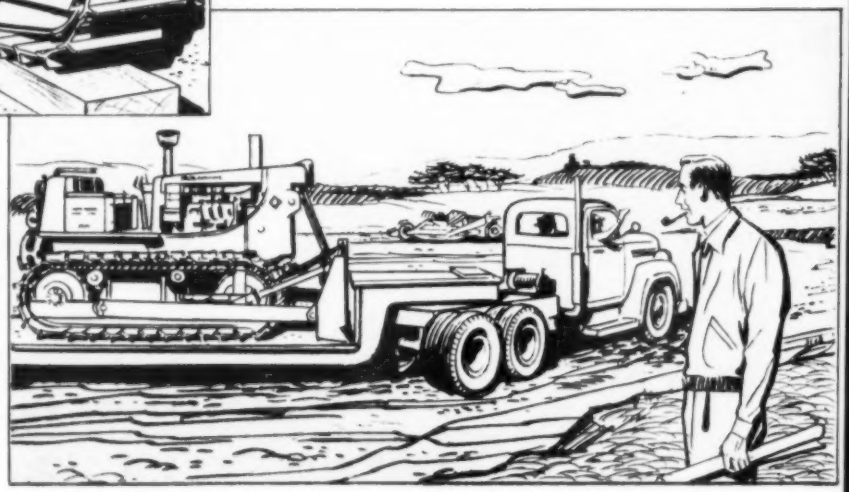
Your Allis-Chalmers dealer *knows* the equipment he sells. He can give you the expert service in shop and field that results in "like-new" performance from every Allis-Chalmers unit in your fleet... keeps them producing on your jobs.



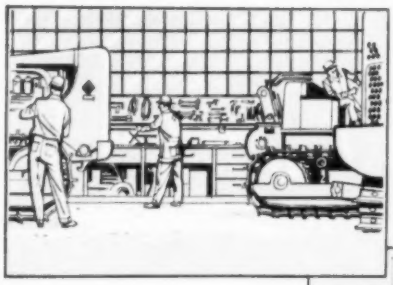


Detailed information on maintenance, adjustments and other facts on care of the machinery is delivered with the equipment. Operating tips are passed along to your men—to help them get started right and get the most from their equipment.

Careful pre-delivery servicing assures that Allis-Chalmers construction machines have been thoroughly checked ...and that they're ready for work as soon as you get them.

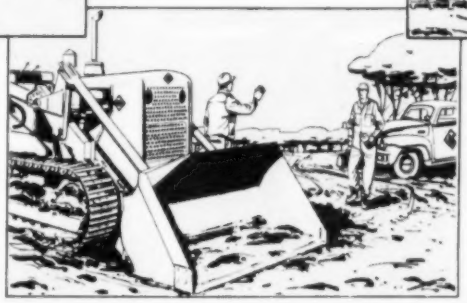


is a specialist in service



Shop service at your Allis-Chalmers dealer is fast and efficient—because it's handled by factory-trained men, using factory-approved tools, equipment and methods. Specialized mechanics and special facilities all help to speed service.

Scheduling checkups with your Allis-Chalmers dealer will insure that proper maintenance procedures are followed . . . stop trouble before it starts . . . keep your machines producing.



Prompt field service—a call—any time, day or night—brings a qualified serviceman and a fully equipped "mobile workshop." Result—problems can be quickly and accurately solved . . . equipment put back on the job with minimum delay.

. . . backed by a ready stock of original specification parts

ENGINEERED RIGHT

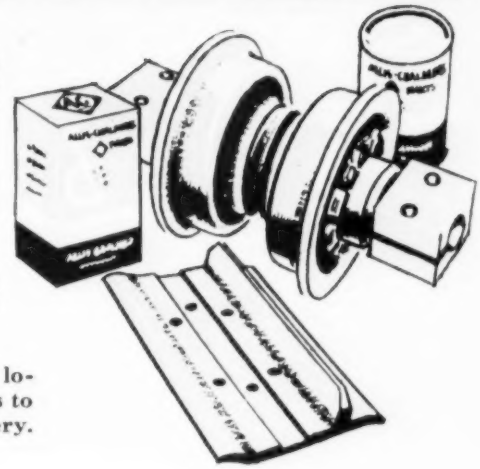
Allis-Chalmers parts are designed as original equipment . . . benefit from intensive metallurgical research. And each comes from the drawing boards of experienced construction machinery engineers.

MANUFACTURED RIGHT

Precision-made parts assure long-life service. They're made by skilled craftsmen on modern industrial machinery and are subjected to original-equipment inspection and testing.

TO PERFORM RIGHT

Each part is made of top-quality material, heat-treated to correct hardness and made to exact specifications. You can depend on them for full-capacity production on the toughest jobs you have.



The men of your Allis-Chalmers dealer organization know local conditions. Look to them for equipment recommendations to fit your job requirements . . . for true value in used machinery.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Look ahead... *move ahead*...and stay ahead

with ALLIS-CHALMERS

Quarries reduce hidden costs by operating with Gulf fuels

GULF MAKES THINGS

The cost of operating your equipment is high enough. But when a quarry runs into the hidden costs of unnecessary downtime and below par performance—the odds are great that it's a fuel and lubrication problem.

The quarries that operate with Gulf fuels and lubricants report sizable reductions in downtime and repairs. They find their equipment keeps working longer, more efficiently, with fewer overhauls. They know Gulf makes things run better . . . operation-wise and cost-wise.

For example: Gulf gasoline and diesel fuels burn clean —help prevent harmful deposits that clog fuel systems, injectors, or cause sticking valves and rings. Gulf lubricants guard against excessive friction and wear.

Whatever equipment you operate . . . truck, shovel, crusher, conveyor, kiln . . . Gulf has a fuel to power it most efficiently, and a lubricant to protect its moving

North American Cement Corporation, Howe's Cave, N. Y., is another leading firm that gets top equipment performance with Gulf fuels and lubricants.

Tecon Corporation of Dallas, handled a major quarrying operation on the St. Lawrence Seaway Project. LeRoy Ramer, Tecon Project Manager reports: "In two years with Gulf we didn't have a single case of engine trouble."

Linwood Stone Products Company, Davenport, Iowa, uses Gulf fuels and lubricants in all their trucks, shovels, crushers, conveyors, kilns. This company tripled lubricant life when they changed to Gulf.

and lubricants

RUN BETTER!

parts. You get more work out of your equipment when you go Gulf.

Make sure *your* hidden costs are kept to a minimum. Use Gulf fuels and lubricants, and see how Gulf makes things run better. Just call the Gulf Sales Engineer at your nearest Gulf office. Meanwhile, mail coupon for 88-page "Contractors' Guide"—the maintenance "bible" for heavy equipment.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Send copy of your new "Contractors' Guide"

Name _____

Title _____

Company _____

Street Address _____

City _____ Zone _____ State _____

New Machinery
and Equipment

For Further Information Use Card on Page 105

• Meckum Engineering's Meckum-Floatex system of sand classification automatically and hydraulically washes, classifies, de-waters, and blends together any grades of sand to produce desired specifications. By use of the automatic blending available, any grade of sand not wanted for specification can be readily set aside.

Sand is fed into the static cone from which the rubber lined pump carries the washed, concentrated sand to the classifying box for the intermediate washing, concentrating, and classifying of the particle sizes. From here the split fractions are introduced into the Meckum-Floatex cones for the final washing and concentrating before the blending of desired grades.

Meckum-Floatex cones are conservatively rated at 40 t.p.h. each, and are installed in proper number to produce the desired tonnages and gradations.

No moving parts reduces maintenance and labor, and eliminates the need for screws, wheels, etc. Only one small rubber lined pump carries suspended sand through the complete system. **(351)**

• This dual-duty cylindrical roller bearing, manufactured by the Rollway Bearing Company, is designed for applications in which both thrust and radial loads must be carried in a restricted space. Actually two bearings in one, the unit consists of two roller assemblies (radial and thrust), with the flanged inner race of the radial section serving at the same time as the revolving plate of the thrust section. The outer race of the radial bearing is stationary with respect to the inner race, and is completely separable to facilitate assembly in restricted space. A step in the bore of the bearing retainer serves as a means of locating the thrust roller assembly in the bore of the stationary thrust

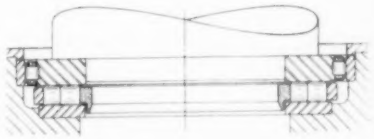
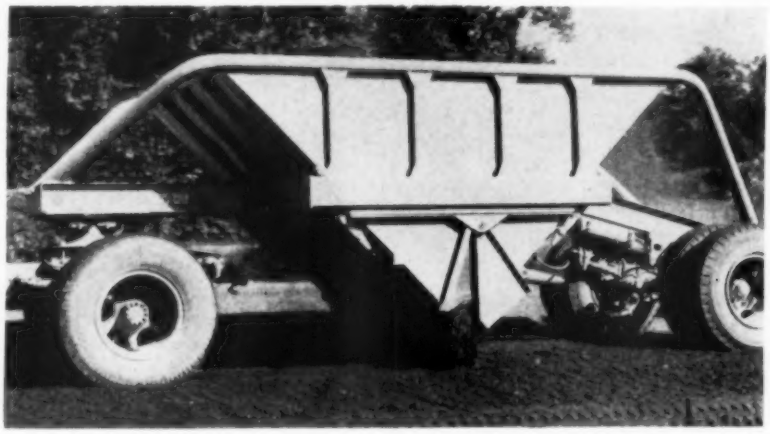


plate. The radial portion of the bearing is located on the shaft.

The bearing, designed for both continuous and intermittent operation, has as typical uses wobble pump applications and king-pin applications.

Ratings on a standard size of 6⅜ in. o.d. and 3½ in. bore are: at 100 r.p.m. — 3,150 lb. (radial capacity) and 24,600 lb. (thrust capacity); at 1,750 r.p.m.—1,340 lb. (radial capacity) and 9,500 lb. (thrust capacity). **(352)**

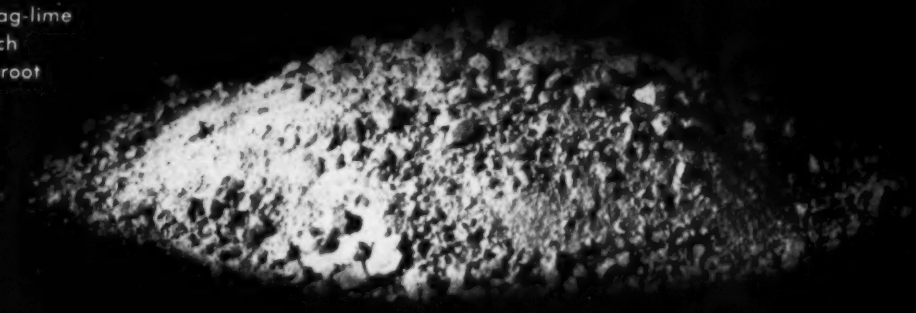


• A versatile bottom dump trailer adaptable to aggregate handling, full width spreading, windrow spreading, and filling has been developed by the Transport Trailer & Equipment Company, Inc.

The 10-cu. yd. capacity "Converto Bottom Dump" has a removable bottom hopper held in place by four toggle-type locks. Air lines which actuate the gates are connected to the main frame by conventional truck-type gladhands. In a matter of minutes, a bottom hopper with single transverse full-width spreader gate may be interchanged with a double clamshell longitudinal gate to facilitate windrow spreading or fill work. Also available is a hopper and gate which can be used for the transportation of cement. **(353)**

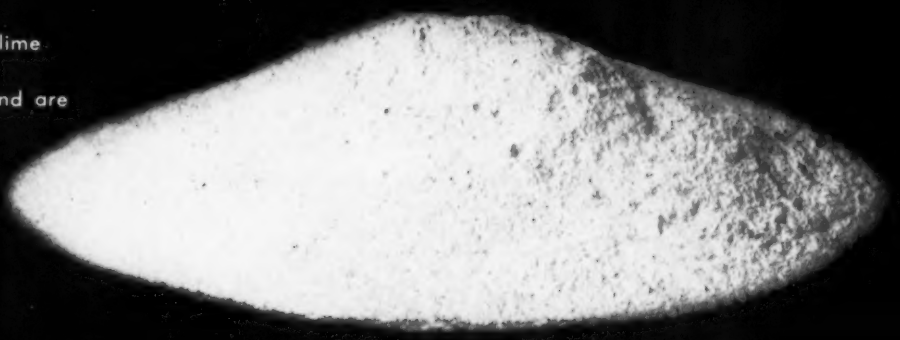
Enter 55 on card, page 105 →

Coarse grades of ag-lime take longer to reach the plant's feeder root zone and are less desirable.



Ag-lime **FINES** bring more money

Fine grades of ag-lime bring almost twice the market price and are in great demand



(Eagle's portable cage mill at work on property of John W. Karch Stone Company, Celina, Ohio.) The purchase and installation of this plant resulted from a Karch sample being processed into an improved product through an Eagle Cage Mill. Completely satisfied with the results, this machine is now producing approximately 25 tons per hour—easily meeting all state specifications.

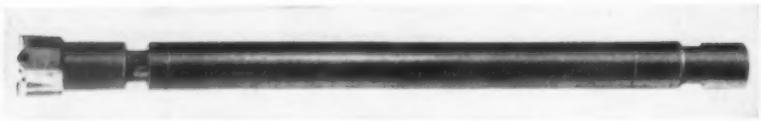
You can pick up the steady big premiums on finer ag-lime. Today's scientific farming demands this grade of ag-lime, which, because it is absorbed faster, can recover the investment faster with cash crops.

EAGLE CAGE MILLS produce more fines!

A single pass Eagle four-row cage mill with its high-speed impact, disintegrating action using hard-faced bars, not only produces a finer aggregate—it increases the tonnage as well! The single pass design has been producing this superior quality ag-lime at an average rate of 30 tons per hour, subject to variations in raw material and weather conditions.

EAGLE
JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS
CRUSHER CO., Inc. GALION OHIO·U·S·A

Special offer ... Send us a sample (200# to 500#) of your pit-run ag-stone, *freight collect*, for Eagle's gradation improvement test. We will put it through an Eagle Cage Mill, make a product report, and ship the resulting ag-lime back to you for your inspection. You're welcome to be on hand when the batch is processed, if you can make it. No obligations of any kind. We are convinced an Eagle mill can make more money for you and want to prove it to your satisfaction!



• The Hammerdril for quarry and mine drilling using the pneumatic principle has been introduced by the Mission Manufacturing Company. The Hammerdril, produced in both low and high pressure models, employs a heavy hammer for maximum striking force and is designed for full use of air energy. Depending upon air pressure and model, the tool can be adjusted to operate from 500 to 6,000 strokes per minute.

The low pressure Hammerdril is in the 100 p.s.i. range while the high pressure model is for 250 p.s.i. and above. Units in both pressure ranges are available in sizes of 3⅞ in. and 5¼ in. O.D. from 100-400 c.f.m.

A feature component of the bottom-hole impact tool is the Mission Hammerbit with six tungsten carbide inserts placed for cutting efficiency and straight full-gauge hole. All air exhausts through the bit against the cutting face and air holes are positioned to blast chips off the bottom.

Bit sizes are offered in 4½ and 4¾ with the 3⅞ in. O.D. tool, and in 6, 6½, 5⅝ and 7-in. for the 5¼ in. O.D. tool. **(354)**

• The Construction Machinery Division of the Clark Equipment Company has introduced a Michigan Model 110 four-wheel scraper. Designed for smaller projects, for self-loading jobs, and for clean-up or finishing work, the Model 110 has a capacity of 8 cu. yd. struck, 10½ cu. yd. heaped.

Teamed with a Model 180 tractor dozer or equivalent prime mover, the Model 110 offers all-hydraulic control. From the tractor seat, the operator simply moves short-throw levers to actuate single-acting cylinders to operate the hoist, apron, and ejector.

The scraper's cutting edge consists of four interchangeable and reversible sections to permit offset or straight blade arrangements. The scraper assembly is made of high-strength steel, submerged arc welded and sturdily reinforced at critical load areas for long life.

The four-wheel scraper is 27 ft. 7¼ in. long, 8 ft. 4½ in. wide and 9 ft. 6 in. high. Empty weight is 14,450 lb.; fully loaded, 40,450 lb. When drawn by a Michigan Model 180 tractor dozer, it can travel at speeds up to 27 m.p.h. **(355)**

• A belt repair kit featuring Crescent fastener plates in 20 assorted sizes, and 144 assorted rivets for attaching the plates, has just been announced by the Crescent Belt Fastener Company, Inc.

The plates and rivets are especially designed for the repair of tears, holes, and rips in belts of all sizes and thicknesses in the conveying, elevator, and transmission belt fields. Ideal for quick and durable repairs, Crescent fasteners punch no holes in the belt and materially prolong belt life. The rivets are self-clinching.

With the Crescent repair kit, as with Crescent plates for joining belts, a hammer is all that is needed to make permanent belt repairs. **(356)**

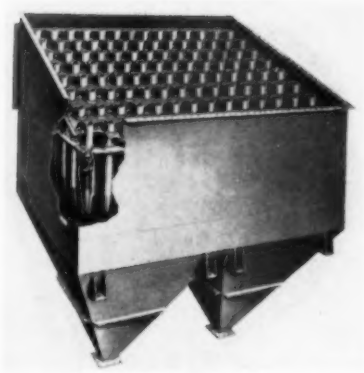


Fig. 1. Side inlet, universal outlet.

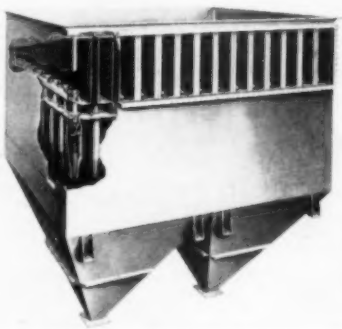


Fig. 2. Top inlet, side outlet.

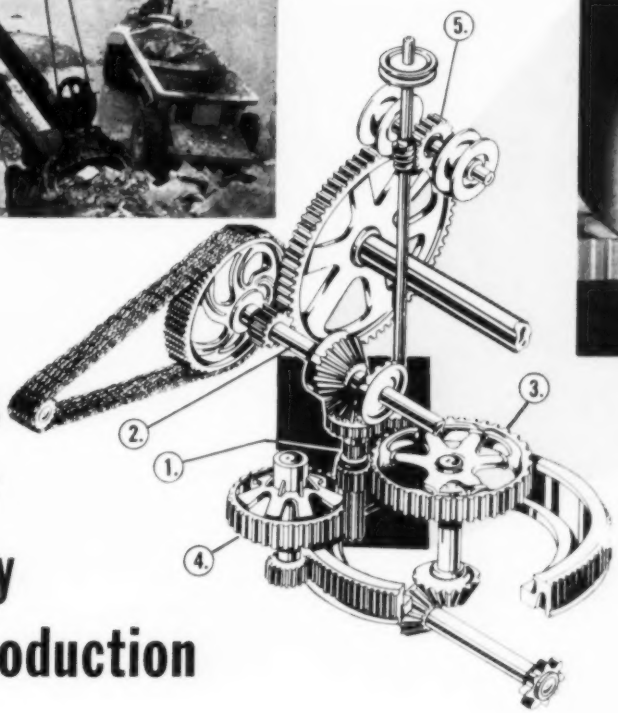
• Two new designs of the Cyclo-trell multiple tube type mechanical dust collector have been announced by Research-Cottrell, Inc. The new designs retain the cyclone tubes developed two years ago with minor improvements. One new arrangement provides for the entry of uncleaned gases horizontally through a side inlet. The cleaned gases flow out of the collector through a universal outlet (Fig. 1). The outlet flange is constructed so that outlet ducts or flues may be connected for gas flow at any angle.

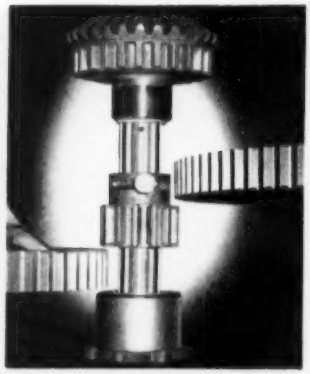
In the second new design (Fig. 2) the uncleaned gas enters the collector through an inlet in the top and leaves through an outlet on the side.

Both designs are available in various capacities. The smallest utilizes a single row of three tubes and the largest 24 rows of tubes 14 tubes deep or a total of 336 cyclone tubes. Tubes are arranged in rows of 3, 4, 6, 8, 10, 12, and 14.

Previously the Cyclo-trell has been available with a side inlet and a side outlet arrangement. **(357)**

A St. Louis quarry has greatly increased its output using this Model 3000 Manitowoc shovel equipped with a 2½-yard dipper. One of the most important factors contributing to the company's production increase is the Manitowoc "Power-flo" drive described below.





The key to Manitowoc's extra power is the key to top production

. . . and that extra power is provided through the *exclusive* Manitowoc "Power-flo" slide pinion arrangement that directs the full flow of engine power *only* to the function in operation. There are no power-robbing extra gears moving, even when not in operation (and gears that don't move don t wear out) . . . no complicated trains of gears that hold production down and keep maintenance costs up.

What arrangement could be simpler? As shown in the photograph above, the slide pinion itself is a single, sturdy shaft, spline-fitted with the necessary gears to engage, or disengage the desired function. The slide pinion (No. 1 on the drawing) is driven directly from the drive shaft (2) using only one set of clutches to drive the travel, swing and boom hoist.

With the slide pinion up, the power flows directly from the reversing clutches to the travel gear (3) through the center pin and to the horizontal shaft in the carbody.

With the slide pinion down, the power flows directly to the swing shaft (4) containing the final drive pinion, which meshes with the carbody ring gear.

With the slide pinion in neutral, the reversing clutch is left free to operate the boom hoist (5) if an optional independent boom hoist is not used.

The result is *direct* power to every function . . . a feature found in *Manitowoc* cranes, draglines and shovels. The faster cycle, heavier lifts and bigger bites found in Manitowocs are the direct result of this simple and effective "Power-flo" design. That's why output is *measurably* higher with Manitowoc . . . that's why it will pay you to see your Manitowoc dealer for complete information on the rig best suited to your operation.

Manitowoc

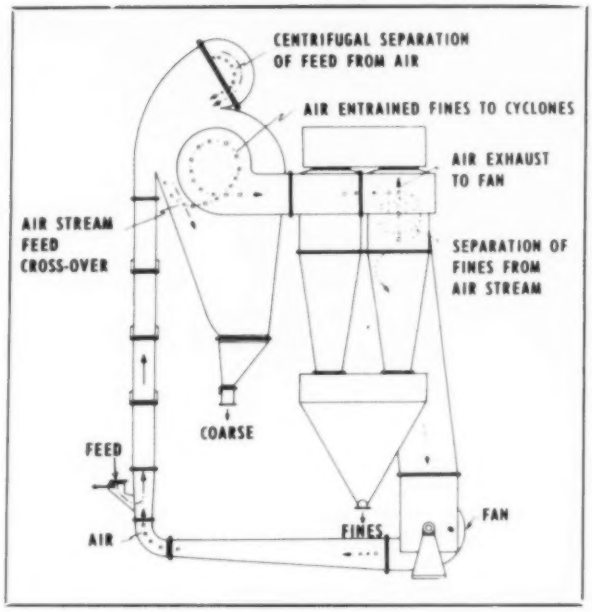
MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

• The Buell Engineering Company, Inc., announces a new centrifugal classifier system which separates dry fines from coarse materials at high operating efficiencies. The new classifier has no moving parts, requires virtually no maintenance, and utilizes but 0.04 to 0.5 hp. per t.p.h.

The classifier attains its high operating efficiencies by using for the first time a combination of aerodynamic forces in obtaining virtually complete separation of fines from larger material. For example, the classifier is designed to extract from most feed materials more than 98 percent of the very fine particles having diameters smaller than 325 mesh (44 micron), with no oversize material in the fines.

In operation, feed material and gas, usually air, enter the classifier through a sharp bend at the top, and air and feed are separated by centrifugal force, the air stream passing behind a baffle plate against which the feed material slides. The air stream then crosses the curtain of feed material, resulting in an intense scrubbing action separating fine particles from tailings, breaking up agglomerates, and subjecting all particles to an equal drag force. Very large particles, if present, are immediately precipitated by gravity to the bottom of the classifier. Intermediate and finer particles flow with the gas stream in a spiral path around the exhaust orifice.

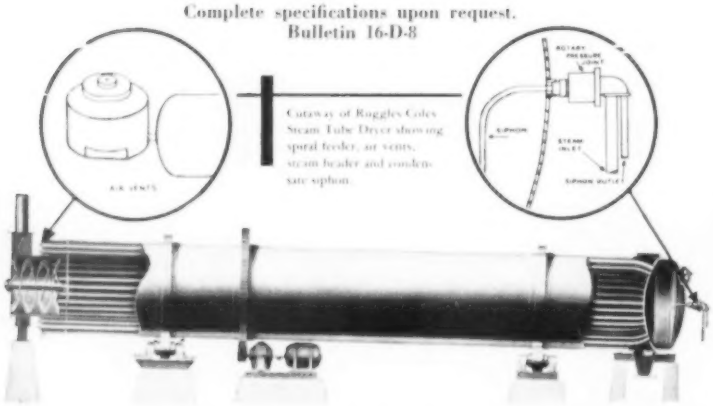


Centrifugal classifier in closed circuit.

The classifier is available in sizes to handle from 100 lb. to 100 tons of feed material per hour, and is particularly recommended for classification applications in the 400-200 mesh range. (358)

Ruggles-Coles STEAM TUBE DRYERS

Complete specifications upon request.
Bulletin 16-D-8



Cutaway of Ruggles-Coles Steam Tube Dryer showing spiral feeder, air vents, steam header and condensate siphon.

HARDINGE COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 240 ARCH ST. • Main Office and Works

New York - Toronto - Chicago - Hibbing - Houston - Salt Lake City - San Francisco - Birmingham - Jacksonville Beach

Enter 58 on card, page 105

• A new heavy-duty 4 in. Blue Brute drifter drill with standard, neutral, and reverse rotation has been developed by the Worthington Corporation.

The new drill is interchangeable with drills now in service, including Worthington wagon drills, Port-A-Tracs, and hydraulic booms on tractors and trucks. (359)

Instantaneous
GRAVITY DUMP

Any time quick dumping action is needed, operator releases fast by-pass of fluid in hydraulic cylinders . . . *gravity* takes over . . . dumps load *instantly*. Hydraulic cylinders check body-tilt at 65° angle . . . have same cushioning action when dump body is returned to normal hauling position.

Controlled
GRAVITY DUMP

During a *full-controlled* dump cycle, hydraulic system acts as a retarder. *Gravity* actually tilts the body . . . hydraulic pressure *controls* the rate of discharge, or *holds* the dump body in any desired position . . . *No body-hoist!*

You get both in new 10-YARD Dumptor!

Plus →

PIVOTING SEAT for 2-direction travel

Operator always faces direction of travel . . . swings around *without leaving seat*. Dual steering wheels, throttle, brake pedals are located at both operating positions of pivoting seat. Directional travel and speed-range lever, and the dump controls are centrally-located for convenient 2-way operation . . . no-turn shuttle hauling.

Big things have happened since you last looked at Dumptors. A new, 10-yard Model 100, with 30,000-pound payload capacity, has been added to the Koehring® line. In addition to its dual dumping advantage, and new two-way controls for no-turn shuttle hauling, you also get: speeds up to 20 m.p.h. in either direction • speed-range selections controlled by easy-acting hydraulic clutches • constant-mesh transmission with smooth torque-converter drive • power steering • 28½% gradability, and many more advantages for low-cost, heavy-duty hauling. A smaller, companion-model 6-yard Dumptor® is also available. Why wait? Call Koehring distributor *today!*

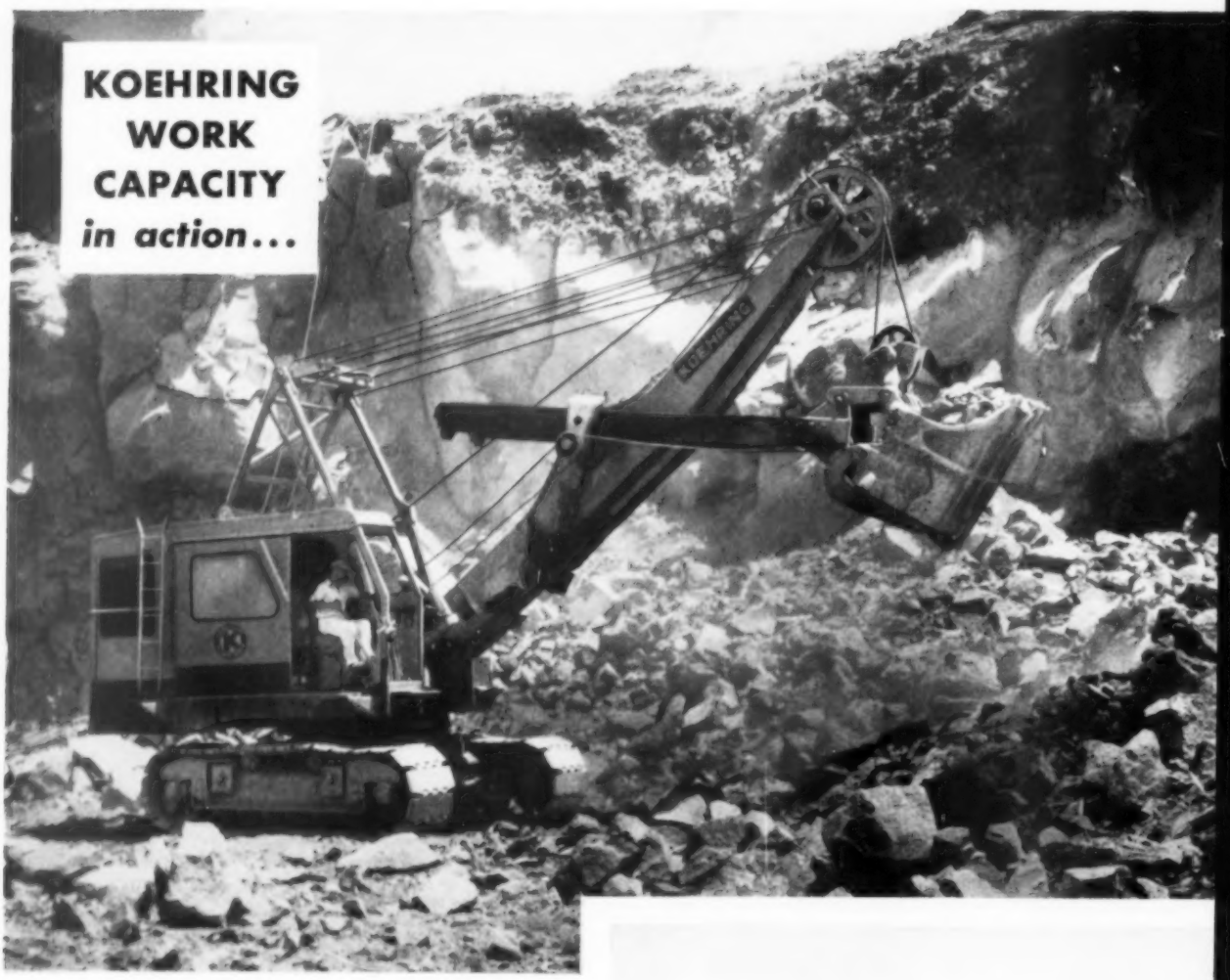
KOEHRING
DIVISION OF KOEHRING COMPANY

Milwaukee 16, Wisconsin

KOEHRING HEAVY DUTY

K643

KOEHRING WORK CAPACITY *in action...*



Heavy-duty rock shovel — Owner of this quarry used a Koehring® 1½-yard 605 to load out blasted rock. Powerful, 2-section chain crowd, and rugged digging strength of its deep-section boom and dual dipper sticks proved more than a match for the heavy rock. It's shown here with 22-foot boom, 16½-foot sticks — also available with 28-foot high-lift boom and 23-foot sticks. Strength and stability as a shovel increase the 605's work capacity with all attachments. For proof — check its lift rating in Koehring chart on opposite page.

Long-reach dragline — Here's a special size machine that fills a production gap on many operations — the Koehring 805. It handles 2 to 3-yard dragline bucket on 50 to 150-foot boom. Converts to clamshell, 52-ton lift crane, 2-yard shovel. Have Koehring distributor demonstrate what this big 805 will do on your stripping, stockpiling, lifting, loading.

KOEHRING HEAVY DUTY

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis. . .

R809

High-lift stripper — Look at the work range of this 1205 stripping shovel. When equipped with 3-yard dipper on 40-foot boom, it has a cutting height of 42 feet-10 inches, and dumps at 31 foot-5 inch height. That's with boom at 45° angle. Where extra reach is needed, you can use a 2½-yard dipper on 50-foot boom — and get 51 foot-4 inch cutting height, and 40 foot-10 inch dumping height, at a 45° boom angle. (For heaviest digging, a standard Koehring 1205 shovel has 3-yard dipper on 30-foot boom.) Depending on weight of materials, it also handles 3 to 4-yard dragline or clamshell buckets on 60 to 170-foot boom — details in chart below.

25-ton handyman — With its high speed mobility on rubber, Koehring 305 truck crane is a handy, heavy-duty material-handling rig around mines and quarries. Installs machinery, unloads heavy equipment and supplies — safely lifts up to 25 tons. Has full complement of clamshell, dragline, shovel or hoe attachments for all-round use.

Quick facts on KOEHRING WORK CAPACITY:

MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
ON RUBBER			
205	3-axle truck, or 21.5 mph Cruiser	30,000 lbs.	at 12-ft. radius
305	3-axle truck, or 18 mph Cruiser	50,000 lbs.	at 12-ft. radius
435	4-axle truck	70,000 lbs.	at 15-ft. radius
545	4-axle truck	90,000 lbs.	at 15-ft. radius
ON CRAWLERS	Size shovel	CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)	
205	½ Cu. Yd.	20,000 lbs.	at 10-ft. radius
305	¾ Cu. Yd.	30,000 lbs.	at 12-ft. radius
405	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
605	1½ Cu. Yds.	72,300 lbs.	at 12-ft. radius
805	2 Cu. Yds.	104,200 lbs.	at 12-ft. radius
1205	3 Cu. Yds.	190,000 lbs.	at 12-ft. radius

Extra lift capacity means . . . ***MORE WORK CAPACITY WITH ALL ATTACHMENTS***

Koehring excavators and cranes also manufactured in:
CANADA • ENGLAND • SPAIN • JAPAN

Thermoid Belting is "built to take it"

at the rate of 175 tons an hour

The McShane "BATCH-A-MATIC" is equipped with Thermoid Conveyor Belting.

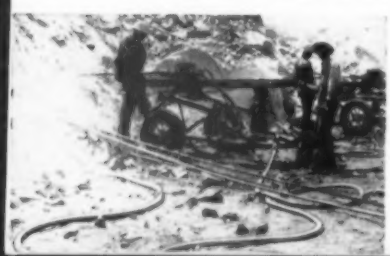
The belting used on the McShane "BATCH-A-MATIC" takes severe abrasion and hard use. In the space of two minutes, it has to charge a truck with 3 cubic feet of aggregate, *plus* 21 cubic feet of cement . . . or stockpile aggregate at 175 tons an hour.

T. S. McShane Co., Omaha, makers of the "BATCH-A-MATIC" equips every machine with Thermoid Belting. To quote Mr. R. Milek, McShane's chief engineer: "Thermoid engineers recommended this belting after studying our needs. This assures every customer long, trouble-free belt life without costly downtime."

Your distributor working with Thermoid engineers can recommend the right belt for *your* needs.

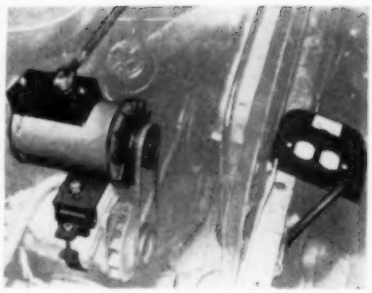
Cut costs with Thermoid Multi-V Belts . . .

. . . and Thermoid Hose



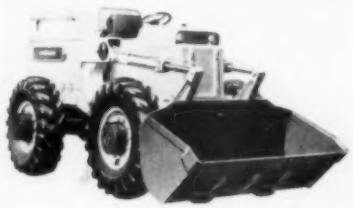
Thermoid

Thermoid Company
Trenton, New Jersey • Nephi, Utah



• Forney Generators, Inc., has available a 2,000 watt a.c. power source for remote locations as a permanent installation on truck, tractor, or car. The Forney generator is furnished complete with mounting kit for most late model vehicles. Included is a service outlet and voltmeter to permit engine operation at proper speed for the output required.

The armature is driven from the engine's fan belt system and the field is excited by current from the 12-v. or 6-v. battery of the engine, running at fast idle. **(360)**



• The Frank G. Hough Co. has available a new four-wheel-drive, rubber-tired tractor-shovel with a carry capacity of 7,000 lb. The new loader, designated the Model H-70, replaces the Model HH Payloader.

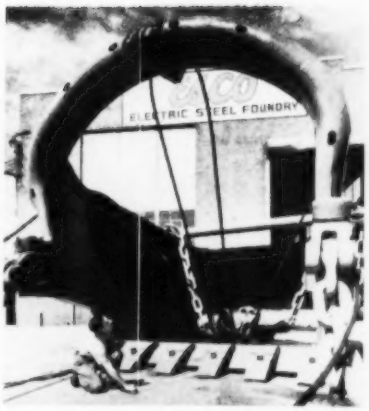
Features of the new H-70 include increased power, more traction, stronger components, greater protection against dirt and dust, more efficient torque converter, complete power-shift transmission, power-transfer differentials, power steering, pry-out bucket action, safety boom arms, power-boosted brakes, and numerous refinements.

New and more powerful gasoline and diesel engines provide from 105 to 110 hp.

Improved weight distribution provides an additional 1,500 lb. of weight on the rear wheels making possible better traction and greater digging effort. **(361)**

• Costly losses of minerals due to erosion by wind and rain can be controlled with Aerospray 52 Binder, a product of the American Cyanamid Company. When sprayed on exposed surfaces of minerals in open storage or in open railroad cars, the new mineral binder forms a protective crust which is insoluble in water.

A solution of Aerospray 52 Binder is made up by diluting with water to any spray strength that may be required to meet prevailing conditions. The solution can be applied with the aid of a small water or gear pump. Full crust protection is afforded about six hours after spraying. **(362)**



• Said to be the largest in the world, this tri-tapered dragline bucket made by the Electric Steel Foundry Company weighs 69,000 lb. and has a capacity of 35½ cu. yd. It is specifically designed for use with the Marion Super 7800.

The bucket is constructed of ESCO Alloy 12M and manganese steel castings, along with U. S. Steel's T-1 plate. The drag chain is integrally cast, each link weighing 90 lb. Each tooth weighs 177 lb.

Average width of the bucket is 11 ft. 2 in.; height from the ground to arch, 13 ft. 5 in.; overall length is 18 ft. 9 in.

The tri-tapered design facilitates the digging of larger rocks and increases yardage of each bite. **(363)**

• Detachable containers, up to and over 40 cu. yd. capacity, are employed in a new system of materials handling developed by Dempster Brothers, Inc. Called the Dempster-Dinosaur, the system is used in handling crushed materials in short hauls, or for the temporary storage and removal of waste products. Two models are available—one handles 22,000 lb.; the other, 30,000 lb.

At its destination, the load can be dumped or the container can be put down on the ground or pushed off on a dock by automatically reversing the ratcheting cycle of a bail against hooks under the container. **(364)**

UNSTICK
stuck
BINS
with new
electro-permanent magnetic
ERIEZ
HI-VI
VIBRATORS

PAT. PEND.

Here's the newest and most efficient answer to those hard-to-move materials in sticky bins . . . designed to provide superior operating efficiency . . . exclusive pinpointed vibration gets right to the trouble spot – starts stubborn materials moving!

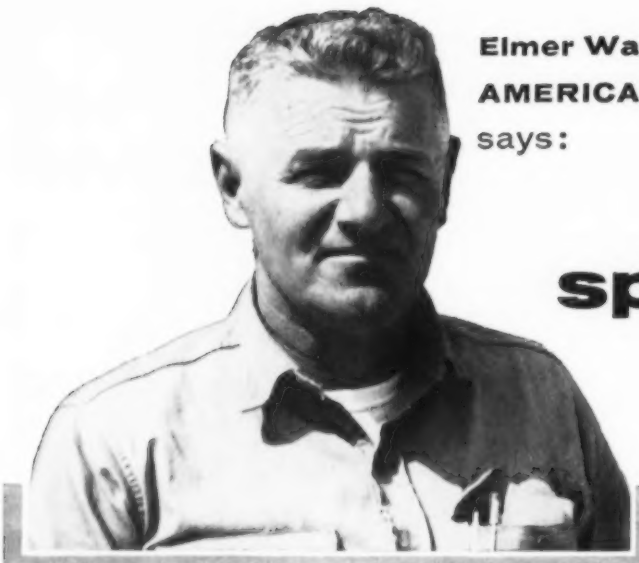
NO RECTIFIER NEEDED • COMPLETELY ENCLOSED HOUSING • GREATER VIBRATION IMPACT THAN COMPARABLE SIZE UNITS • RUGGED AND DURABLE • LOW FIRST COST • LOW OPERATING AND MAINTENANCE COST.

Special Mill Mutual ACCEPTED Units for HAZARDOUS DUSTY LOCATIONS

GET THE WHOLE STORY . . . WRITE TODAY.
Eriez Mfg. Co., 113K Magnet Dr., Erie, Pa.

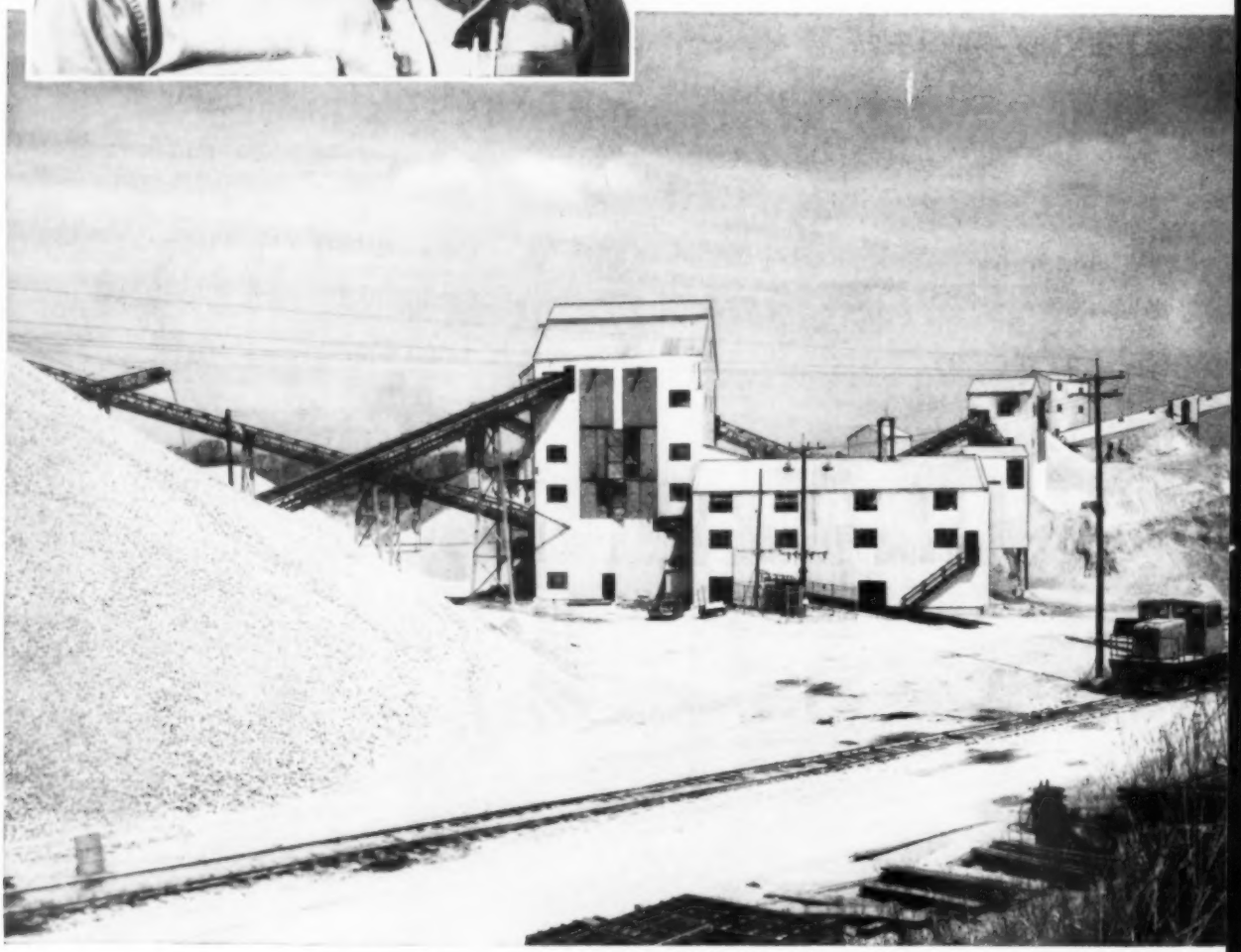
ERIEZ

Enter 63 on card, page 105



Elmer Warner, *Plant Superintendent,*
AMERICAN AGGREGATES CORPORATION,
says:

"We more specifications with



Two Jeffrey jigs, *each processing more than 150 tons of aggregate per hour, are located in this building at American Aggregates' new "pushbutton" plant at Columbus, Ohio. A third unit was recently purchased in lieu of a heavy-media separation system at one of their other plants.*

CONVEYING • PROCESSING • MINING EQUIPMENT . . . TRANSMISSION

than met rigid state for concrete aggregate Jeffrey jigs"

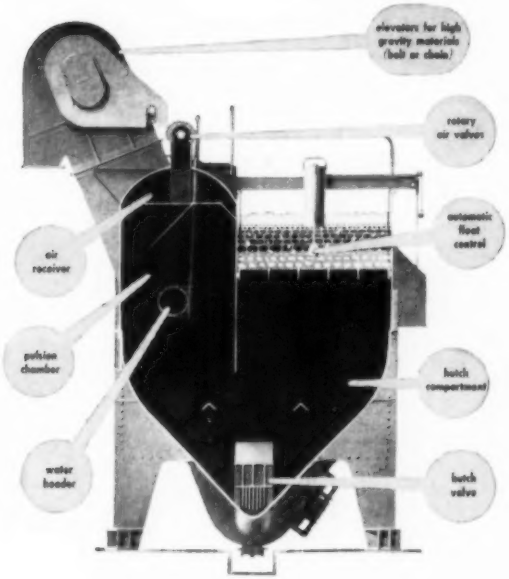
That's only part of Mr. Warner's report. "Meeting state specifications for concrete aggregate is no longer a problem with us here at our Columbus, Ohio plant. In previous operations we were hard-pressed in meeting 'specs'.

"A year ago we bought our first Jeffrey jig to help us meet state requirements allowing only a maximum of 5% deleterious material. This jig, the first to be used in this area for separation process, held deleterious material to well below the maximum allowed.

"You can see why we recently installed our second Jeffrey jig here . . . and why we bought another for our plant at Kalamazoo, Michigan."

Jeffrey jigs produce premium quality concrete aggregates for only a few pennies per ton of material processed. That's the kind of profitable performance that pays off in this industry.

Jeffrey engineers are qualified to advise you on material handling and processing equipment for sand and gravel. Get in touch with The Jeffrey Manufacturing Company, 917 North Fourth Street, Columbus 16, Ohio.



Jigging is a universal separating process — *for materials ranging from specific gravity of gold (19) to coal (1.3). It stratifies materials, separating solids in upward and downward pulsations of water. Heavy materials settle to the screen plate and are drawn off . . . lighter materials overflow. Proportions of high gravity materials may vary from 90% to 10% or less. Separation problems involving even small differences in specific gravity can be solved by efficient jigging. A Jeffrey sand-and-gravel jig handles materials as quarried. Coal, shale, clay, roots and sticks are removed . . . leaving sand and gravel of marketable grades.*

JEFFREY

MACHINERY . . . CONTRACT MANUFACTURING

• The Hoffco-Veyor, a new portable pneumatic system designed to keep materials on the flow, has been placed on the market by the U. S. Hoffman Machinery Corporation. The Hoffco-Veyor is available in two standard models, No. 100 and No. 150.

Hoffco-Veyors easily turn in their own length, can be wheeled to any location in the plant, and immediately put to work on otherwise hard to get at materials. They convey from 50 to 100 lb. per minute continuously or intermittently, depending on requirements. Where quantities exceed 7½ cu. ft., standard 55 gal. drums can be used as auxiliary collectors. Hoffman-designed adaptor covers provide inlet and outlet connections. Adaptor covers are held held in place by vacuum—can be shifted easily from one standard 55 gal. drum to others as needed.

Equipped with inlet valves to take standard size 1½ to 2 in. vacuum hose, Hoffco-Veyors can be used as vacuum cleaners when not in use as portable conveyors. **(365)**

• Effortless maneuverability and smooth, controlled dumping are features of the new Model TS-1622 rear dump, variable wheel base trailer now being produced by the Easton Car & Construction Company. The trailer is designed for use with the Euclid Model S-12 tractor, and will be known as the S-12 rear dump. Rated capacity of the trailer is 22 tons, based on material weighing 2,700 lb. per cu. yd.

Smooth, controlled dumping is achieved through the use of Easton's newly-designed single stage, double acting hydraulic hoist, which is supplemented by an integral auxiliary control device developed especially for the new unit.

The body is ruggedly built and sturdily braced on the sides, and features a new end construction designed to withstand the heaviest impact of shovel-loaded rock. **(366)**

New! CRESCENT MAKES BELT REPAIR HISTORY!

with the new CRESCENT Belt Repair Kit

featuring

20 ASSORTED SIZES OF FASTENER PLATES and 144 ASSORTED RIVETS IN CORRECT SIZES FOR QUICK, LASTING REPAIRS.

Now make belt repairs no matter what size rip, tear, hole, in a matter of minutes with the handy CRESCENT KIT. Select the right size of plate and rivet from this assortment and all you need is a hammer... for a quick and permanent repair. You save many times its cost in longer belt wear by timely repairs.

$4.95

Available from your distributors or write to: Dept. PQ-1

CRESCENT BELT FASTENER CO.

Serving U. S. Industry since 1897

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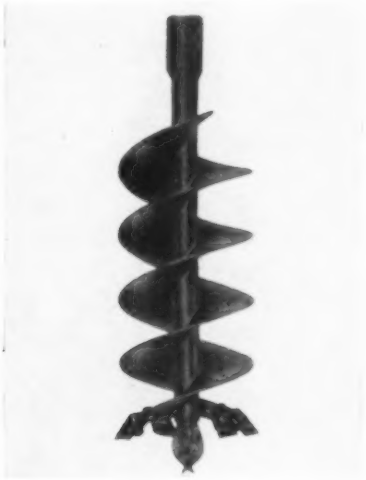


• Two new versions of the Pengo auger cutting heads are now available from Petersen Engineering Company, Inc.

Pengo light-duty heads are designed for welding to single helix continuous-flight augers, or to light-gauge double helix augers where flights are not heavy enough to carry the bolt-on Pengo light-duty shanks. Pengo light-duty shanks are designed for bolting to twin helix continuous-flight augers. Both heads and shanks use the new Pengo No. 30 Wisdom Tooth, a quick-change, reversible tooth which provides double wear. **(367)**

Enter 66 on card, page 105

large capacity ...modern portable CRUSHING-SCREENING PLANT

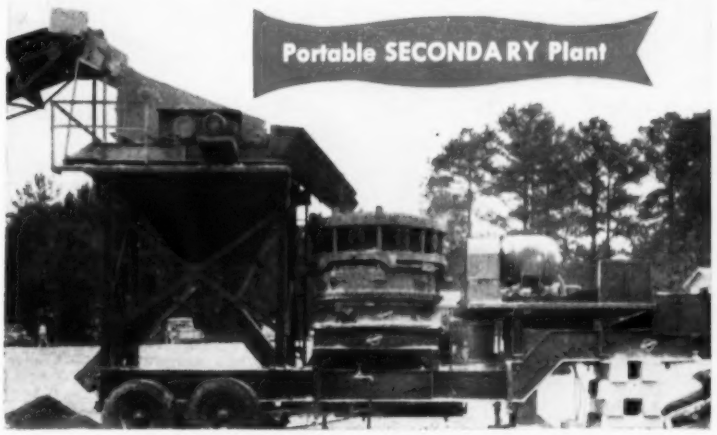
of

NELLO L. TEER
Raleigh, N. C.

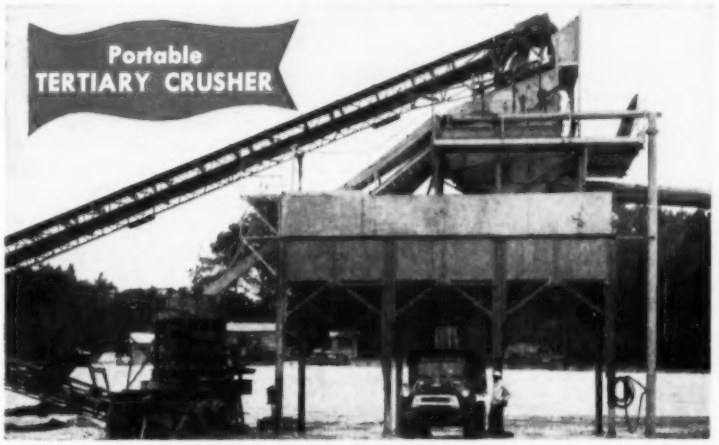
TELSMITH EQUIPPED THROUGHOUT

Owned by Nello L. Teer Co., and operating near Raleigh, N. C., this big capacity, highly mobile Telsmith Portable Crushing and Screening Plant is modern in every detail. It has primary, secondary, and tertiary units. Crushing hard granite, it produces 300 tons hourly of minus 1½" crusher run; or 200 tons hourly of washed material in 3 sizes: minus 1¼" plus ¾", minus ¾" plus ⅛", and minus ⅛"—for ready-mix plants and highway construction. Get Complete Plant Bulletin 266.

42" x 41' Portable Apron Feeder; 3'9" x 5' Heavy Duty Scalping Screen; 30" x 42" Jaw Crusher, with 36" delivery conveyor; 30" x 54' Portable Conveyor.



4' x 8' Double Deck Heavy Duty Scalping Screen; 489-S Gyrasphere Crusher.



5' x 12' Triple Deck Vibro-King Finishing Screen; Three Steel Bins; 48-FC Gyrasphere Crusher; 24" x 54' Portable Conveyors.

P-22

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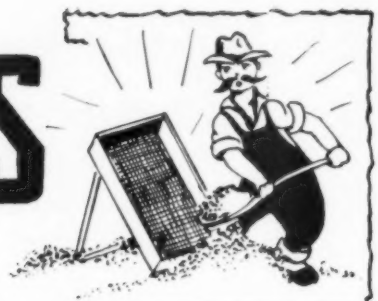
SMITH ENGINEERING WORKS

504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Sengworks, Milwaukee

Enter 67 on card, page 105

SCREENINGS



By RAY L. SMITH JR.

COLLEGE football coaches whose travails make the "Perils of Pauline", by comparison, seem like the height of tranquillity, today are heading into what could be the most anguished season for the sideline pacers in 46 years.

For the first time in all that span, the scoring rules have been changed.

This fall, the team which scores a touchdown has the option of kicking for one point or running or passing for two. The ball will be placed "on or behind" the three-yard line, instead of on the two-yard line. Under the old rule, only one point was scored for a conversion—regardless of the way it was made.

Despite the wailings of most coaches, we suspect that the new rule will find favor with the fans. If for no other reason, it will give them one more decision to "quarterback" on Monday mornings.

It should be an interesting season, and one in which the weekends seem especially long—for some of this fall's games are likely to be played and replayed wherever fans gather to out-guess the harried coach.

Foresight

WE ARE a bit intrigued by a news item reporting that a young couple have built, by their own hands, a two-layer round house of brick, glass and Philippine mahogany. Evidently, except for a little help with the bricklaying and roofing, it's all theirs.

Apparently the wife's favorite recipe results in a batch of terrazzo flooring. She admits that she can't bake a cake, but remarked to the press, "I've become so accomplished at making terrazzo floors that I've been offered a full time job at it."

The item went on to say that they were able to preserve the contours of the land and also save excavation costs. We immediately began debating as to how one could have an excavation without excavation costs. So, we sent somebody out to investigate, and the simple story came back.

The shape of the house was suggested by the site, a funnel-shaped, former gravel pit. It just goes to show what can be accomplished with a little foresight. At least, they won't have to sweep dirt out of the corners.

Potpourri & Succotash

A New Mexico politician was complimented after a recent speech by an admirer who pumped his hand vigorously.

"That was an excellent speech, sir. I especially liked the straightforward way you dodged those issues."

Architects cover their mistakes with ivy, doctors with sod, and brides with mayonnaise.

A specialist is a person who knows very much about very little and continues to learn more and more about less and less, until eventually he knows practically everything about almost nothing at all.

Don't look back; someone may be gaining on you.

"Four years of college," sighed the girl graduate, "and whom has it got me?"

In this age of unequal right for women, a husband can't consider himself hen-pecked until he has to wash and iron his own aprons.

Prisoner to fellow inmate: "I was making big money—about a quarter of an inch too big."

If you want a job done, give it to a busy man. He'll have his secretary do it.

Sign posted on a Scottish golf course: "Members will kindly refrain from picking up lost balls until they have stopped rolling."

"If Patrick Henry thought taxation without representation was so terrible, he should see it with representation."

A little boy was petting his new cat near the fireplace when the cat started purring loudly. He yanked her away by the tail. The cat yowled.

"Don't hurt the new kitty, dear," said the Mama.

"I'm not," the youngster explained. "She just started to boil."

The boss called the new stenographer into his office. "Miss Gann," he said, "you are the best looking girl we ever had working in this office." A pleased look came into the girl's eyes. "You dress well," the boss continued, "you have a nice voice, you make a good impression on the public, and your deportment is fine." "Oh thank you, she said, "your compliments are very pleasing." "Enjoy them to the fullest," returned the boss, "because we are now going to discuss your spelling, punctuation and typing."

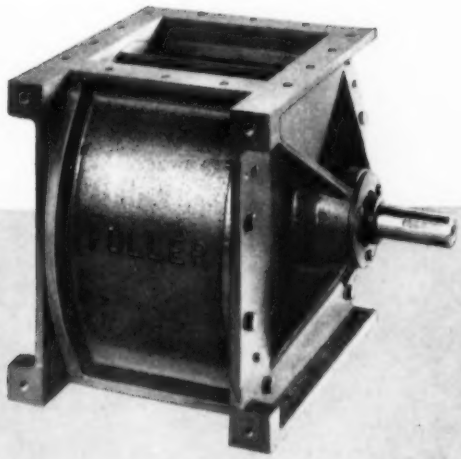
COOL: Latest innovation in home building is a small pool in the living room instead of a fireplace. It looks like great fun—sitting around the pool on a chilly evening soaking marshmallows.

FAST PACE: In the good old days if a man missed a stagecoach, he was content to wait a day or two for the next one. The modern male lets out a squawk if he misses one section of a revolving door.

Fuller Feeders
Keep Conveyors Flowing Freely

. . . whether the load
is a few pounds a minute
or many tons an hour

Fuller Vane Type Feeder
with circular flanges.



Fuller Vane Type Feeder
with rectangular flanges.

Fuller Vane Type Feeders assure you of dependable handling of dry, pulverized and granular materials. They're available in capacity ranges to meet all normal plant requirements, and are built with circular or rectangular outlets. Check these Fuller cost-saving features . . .

Extra-rugged construction. Heavy, cast iron body walls and headplates add rigidity, longer life. Stainless or other metals can be used where sanitary or corrosion requirements demand their use.

Sealed bearings are equipped with Alemite fittings for ease of lubrication and long life. Abrasive particles can't enter, maintenance is cut.

Make effective air locks. Fuller Vane Type Feeders can be used as air locks for pressure differentials up to 3½ lbs.

Stuffing boxes and ball bearings for vacuum, low-pressure and general applications.

And, where extreme volumetric accuracy without pulsation is needed, there's a line of Fuller Roll Type Feeders. For full details on Fuller Feeders write for Bulletin.

See Chemical Engineering Catalog for details and specifications . 1306 F-20

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. . . . pioneers in harnessing AIR

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100 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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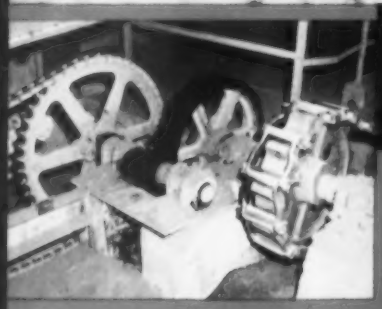
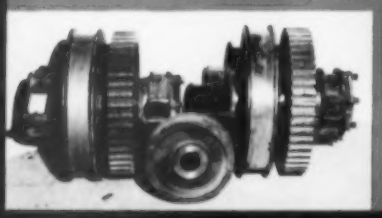
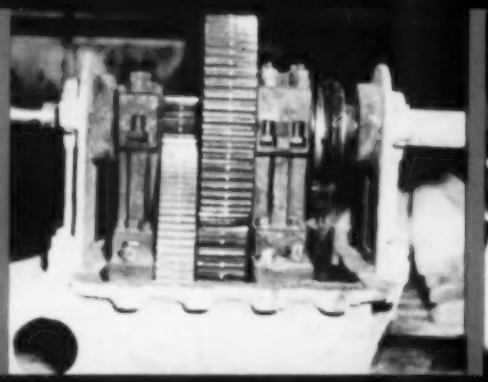


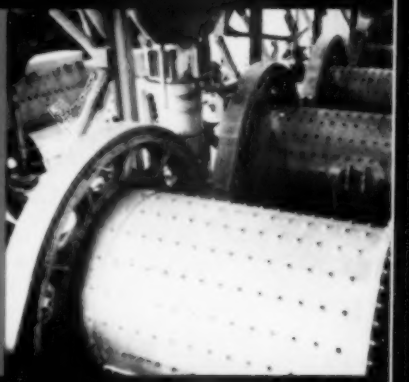
TSP Conveyor Drives and Sprockets.



TSP Wheels and Gears on overhead cranes.



TSP Gears and Pinions on conveyor drive. In service since 1929.



TSP Gearing on ball mills.

They will tell you that "Tool Steel Process" hardened products have been widely used throughout their plants for many years. You'll find long wearing TSP products in their pulverizers, kilns, dryers, cranes, shovels, mixers, drag lines, delivering year-in-year-out trouble free operation.

TSP hardened gears, pinions, wheels, axles, drums, shafts, trunnion rolls, gudgeons, etc., help keep Dragon Cement's giant machinery operating even under the severest work loads. A typical service record at Dragon Cement shows a TSP speed reducer gear in service since 1930.

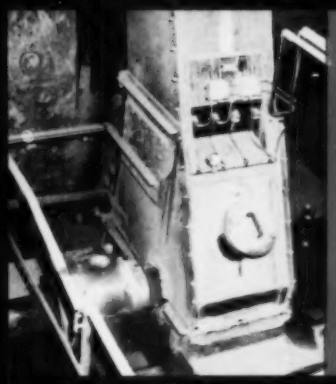
"Tool Steel Process" hardened products are setting up long life records on all types of equipment all over the Cement Industry. Their tremendous wearing qualities are a result of our special hardening process. A file hard surface to the full depth of permissible wear gives maximum life. The core, refined for toughness and ductility, gives maximum strength. There are hundreds of TSP hardened products available to the Cement Industry made to order from your blueprints, or to fit existing equipment. Gearing and other products up to 22,500 lbs. Write today for fully illustrated free Bulletin 452, "TSP Products for the Cement Industry."

THE TOOL STEEL GEAR AND PINION CO.
CINCINNATI 16, OHIO, U. S. A.

AGMA

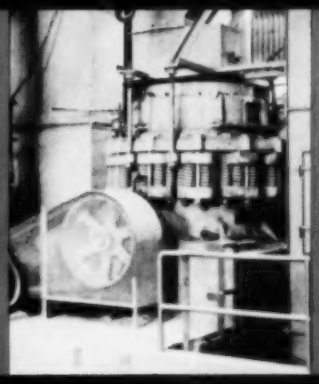
AD 1030

TSP hardened products



TSP Pinions on clinker mill drive shaft.

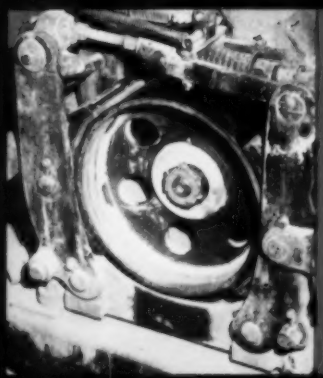
TSP Gudgeon Pins on screw conveyors.



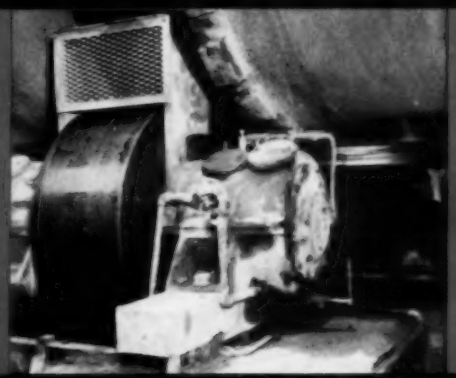
TSP Gears and Pinions on crusher.

TSP Gears and Pinions on four draglines.

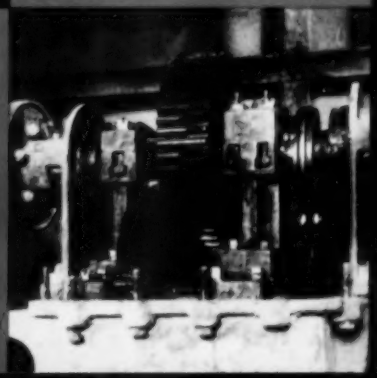
TSP Pinions on kiln drive.



TSP Brake Wheels on all overhead cranes.



TSP Trunnions, Thrust Rollers used on kilns.



TSP Speed Reducer Gear. In service since 1930.

Quality Steel Gears, Pinions, Wheels and Other Hardened Products

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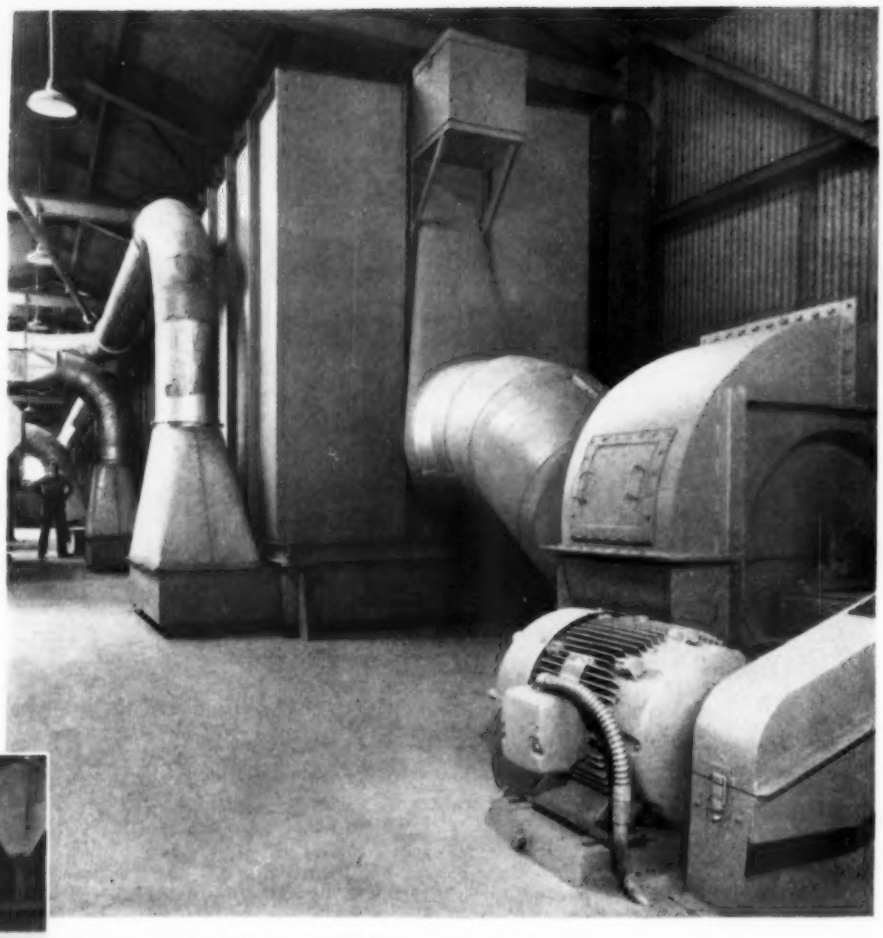


New standard of cleanliness is achieved in new refractory plant. Dust is trapped before it can escape, brought to this Dracco Multi-Bag Filter for high-efficiency collection.

Superintendent James E. Coffman of Harbison-Walker Refractories Company's new Hammond, Indiana, basic firebrick plant reports:

Dracco Dust Control keeps our plant *"clean as a home"*

In this new plant, Dracco Dust Control Equipment serves the entire manufacturing line, collecting any dust from crushers, grinders, mixers, screens, silos and handling equipment.

"By recovering the dust," says Mr. Coffman, "we keep the plant as clean and healthful as the average private home. Plant atmosphere is as pure as the air outside. We also gain virtually 100% production out of our raw material investment."

The Dracco system also prevents such dust-caused problems as abrasive wear of machinery, high plant housekeeping costs, reduced efficiency and material contamination. Performance benefits like these have led Harbison-Walker to specify Dracco Dust Control Equipment for many facilities.

For experienced assistance in solving your dust problems, call in a Dracco engineer today. Contact:

DRACCO DIVISION OF FULLER CO.

4050 East 116th Street · Cleveland 5, Ohio

Complete 40-page catalog on Dracco Dust Control Equipment contains detailed data and valuable reference material. Write for Bulletin 800.

DRACCO *airstream* conveyors
dust control equipment

FULLER COMPANY GENERAL OFFICES

Labor Developments

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

THE recently enacted increase in Social Security benefits and contributions has again focused attention on the question of what kind of protection is available for industrial and other workers against the hazard of loss of income because of old age.

To help answer that question, the U. S. Bureau of Labor Statistics has just released an extremely timely study of the principal features of 100 collectively bargained pension plans in operation during late 1957 and early 1958. This study provides the best available summary of current pension plan practice. Individual employers can match their own practices against these findings to determine whether they are ahead of or behind the procession and by approximately how much.

Of the 100 plans, 86 were financed solely by the employer; that is, they were non-contributory, and 14 were financed by contributions from both employer and employee.

In almost three-fourths of the plans, the employee was permitted to participate immediately upon employment or shortly thereafter. In the remaining one-fourth of the plans, there was a minimum service requirement which generally ranged from 1 to 5 years and/or a minimum age requirement, usually from 25 to 35 years. A few plans had a requirement which either directly or indirectly established a maximum age beyond which newly hired employees could not participate.

All but 8 of the plans specified 65 as the normal retirement age; 7 specified age 60; and 1 specified age 70. In only half of these plans was retirement compulsory at either the normal retirement age or at some other specified age.

To receive the normal benefits, in slightly over three-fourths of the plans, the employee must meet certain service requirements. In over two-thirds of the plans studied, this amounts to 10 or more years.

71 plans included early retirement provisions whereby the employee is permitted to retire prior to the specified retirement age and receive an immediate, but usually reduced, benefit. In one-fourth of these plans, early retirement required the employer's consent. Age 55 and 60 were the most commonly given minimum age requirements. A majority of the plans also required the employee to have completed 10 or 15 years of credited service.

However, should the employee become disabled, in 70 of the plans he could retire immediately. Generally there was no age requirement, but there was a length of service requirement, often as long as 15 years.

The benefit formulas for most of the plans fell into one of the three following categories:

1. The benefit varied in accordance with earnings and length of service. About two-thirds of such plans used career earnings; that is, earnings throughout the entire period of service with the employer, while the remaining one-third used the earnings record for particular years, such as the final or highest 5 or 10 years of service. A specific percent of such earnings is multiplied by the years of service to determine the benefit amount.

2. The benefit varied by length of credited service alone. These plans provide for a normal pension computed by multiplying a specific sum by credited service years.

3. A flat amount to all employees who completed a specified period of service.

Many plans also guarantee a minimum pension to all employees who are eligible for any pension upon retirement.

Slightly less than one-third of the plans offset against the calculated benefit amount payments received under the Federal Social Security program. In some cases, only a part was offset; in others, the total.

The report also calculated approximately how much employees with particular incomes and years of service would be likely to receive from Social Security and private pension plans combined when they retire. This was done before the recent increase in Social Security benefits; they would therefore now be somewhat higher.

As might have been expected, the result showed that lower-income employees were favored. Retirement income equal to at least one-half of the employee's previous pay was provided by at least one-half of the plans for a $3,600-a-year man with 25 years of service, but by only one-fourth of the plans to a $5,000-a-year man with 25 years.

More than one-half of the plans contained provisions for vesting; that is, for guaranteeing to an employee some rights to benefits, even if his employment is terminated. Generally, such vested rights were limited to employees who had attained a certain age or length of service. They usually took the form of eligibility for some reduced benefits at normal retirement age.

Almost one-half of the plans permitted the employee to select a joint-and-survivor option; that is, a choice of receiving either the full benefit upon retirement or a reduced benefit with a guarantee that if he dies while his beneficiary is living, payments at a pre-determined rate will continue to the beneficiary for life.

One-half of the plans were entirely employer administered; the other half, some or all of the administrative responsibility was shared with union representatives.

Increased Social Security

THE Social Security Amendments of 1958 will provide increased monthly payments beginning with the checks which are due early in February, 1959. The amount of the increase will be about 7 percent, although the increase in some checks will be slightly more and in others, slightly less than that percentage.

People who are already getting social security payments do not need to apply for the increase. It will be automatically added to the checks for January, which will be mailed out early in February.

Under other changes made by the new law, social security benefits will become payable to a number of people not previously eligible for payments. They must, however, apply to their social security offices before payments can start. Among the groups now eligible because of the 1958 amendments are:

1. Dependents of people who are 50 or over who are now getting disability insurance benefits (children under 18 or disabled; a wife of any age who has a child in her care who is entitled to benefits; a wife 62 or over; or a dependent husband 65 or over).

2. Disabled people 50 or over who could not qualify for benefits under the old law because they did not have as much as 1¼ years of work in the 3 years before they were disabled. (A total of at least 5 years of work under the law is still required.)

3. Dependent parents whose son or daughter died after 1939, and who could not qualify for benefits under the old law because the son or daughter left a widow, widower, or child.

4. Adopted children whose adopting parent began receiving retirement benefits less than 3 years after the adoption. (In many cases this provision will also make possible payments to the mother of the adopted child.)

5. A person receiving benefits who marries another person also receiving benefits can continue to receive monthly checks, or can become eligible as a dependent of the new husband or wife without waiting 3 years.

Some people in situations similar to those mentioned above may have applied for benefits in the past and been notified that they did not qualify for payments. These people should get in touch with their social security district offices promptly about filing new applications.

Disabled workers whose social security disability benefits were reduced or were not payable because they received workmen's compensation or other federal disability payments will begin to receive the full amount of their social security disability payments. (Applications for these benefits are unnecessary since they began in September automatically.)

Under the amendments it is easier for certain employees of nonprofit organizations and state and local governments to be brought under the law.

There is a slight change in the rules on how much a social security beneficiary may earn and still get social security benefit payments. Under a new provision a person's social security benefit will not be withheld for any month in which he neither worked in his own business nor earned over $100 in wages.

Beginning January 1, 1959, the social security tax rate for employees and employers will be 2½ percent each. The rate for self-employed people will be 3¾ percent. These rates are scheduled to increase every 3 years until they reach 4½ percent for employees and employers and 6¾ percent for self-employed people in 1969. (See the accompanying table.)

Starting with 1959, the first $4,800 of earnings in a year will be taxed for social security and will count toward social security benefits.

The location of the nearest social security office can be obtained from local telephone directories or Post Offices.

Years	Employer (percent)	Employee (percent)	Self-Employed (percent)
1959	2½	2½	3¾
1960-62	3	4	4½
1963-65	3½	3½	5¼
1966-68	4	4	6
1969 and thereafter	4½	4½	6¾

Washington News Letter

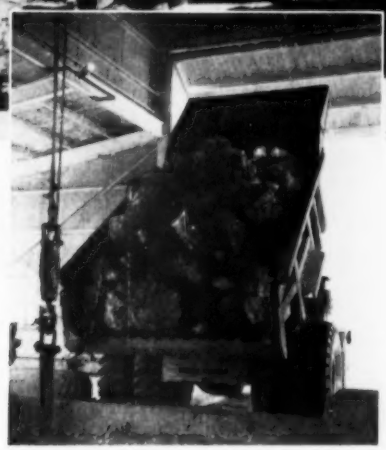
(*From page* 12)

lenders on uninsured mortgages, so that only those protected by relatively large down payments will be easily available.

These are the reasons that the housing experts are so confident of their prediction of a housing decline in 1959. While they are almost unanimous in their prediction, there is far less unanimity among them about the wisdom of this contraction. Although many Administration economists believe that the threat of inflation is so imminent that such limitation is essential, many others are convinced that the action is entirely too premature. The latter represent the same groups who argued that the Administration was too tardy in fighting the recession and is now much too prompt in starting the fight against inflation. Only time will tell who is right.

Net earnings of the American Cement Corporation during the fiscal year ended June 30, 1958, amounted to $7,328,687, as compared with $8,746,792 in the previous year. Net earnings per share of common stock came to $1.69 in 1958, a decline from the $2.04 of 1957. These totals are based on 4,113,615 shares presently outstanding, and after providing for preferred stock dividends.

Enter 75 on card, page 105 ➔



"Euclids give us good service with low maintenance and keep our hauling costs at rock bottom"

LOUISVILLE CEMENT COMPANY, SPEED, INDIANA

Six 22-ton Euclid Rear-Dumps are hauling mortar stone, Portland cement stone and overburden at the Speed, Indiana, quarry of Louisville Cement Company. Working an 8 hour shift, three of these "Eucs" handle 400 tons per hour on hauls ranging from 1000 to 3000 feet. The wide bodies with struck capacity of 15 yards are loaded by a 4½ yd. shovel in four passes. Two other units are loaded by a 2½ yd. shovel. With loaded speeds up to 30 mph, they average 80 tons per hour on a 2 mile one-way haul. In addition, three of these "Eucs" work a second shift hauling overburden.

Louisville Cement Co., like hundreds of mine and quarry operators, has found that Euclid equipment moves more tons at lowest operating and maintenance cost. Dependable Euclid performance is the result of advanced engineering, rugged construction and almost 25 years experience with off-highway haulers.

To be sure you have the most economical hauling equipment, get a production and cost estimate from your Euclid dealer on the model best suited to your work — you'll find there are a lot of reasons why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

STURDY CONSTRUCTION,

mean savings down the line with

TABLE 1

Belt width, inches	Capacity in tons per hour at belt speed of 100 FPM			Maximum lump size, inches		Maximum recommended belt speed, FPM	
	Wt. of material, lbs. per cu. ft.			Sized	Unsized	Half max. size lumps	Max. size lumps
	50	75	100				
18	27	40.5	54	3	5	400	300
24	50	75.0	100	4-1/2	8	500	400
30	81	121.5	162	7	10	600	450
36	117	176.0	235	8	12	650	500

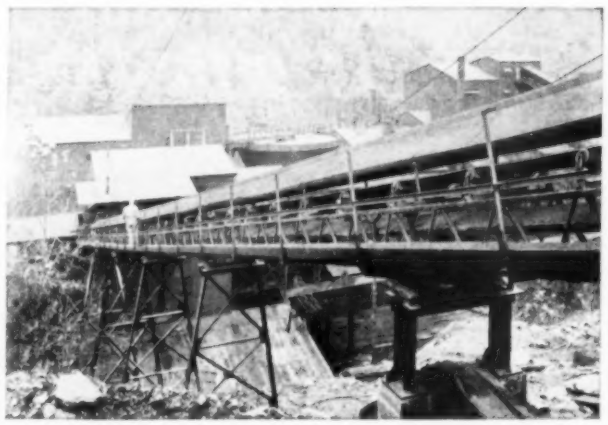
TABLE 2.

Weight of material, lbs. per cu. ft.	Belt width, inches	Capacity, tons per hour										
		Belt speed, feet per minute										
		100	150	200	250	300	350	400	450	500	550	600	650
50	18	27	40	54	67	81	94	108					
	24	50	75	100	125	150	175	200	225	250			
	30	81	121	162	202	243	283	324	364	405	445	486	
	36	117	176	235	293	352	411	470	528	587	645	704	763
75	18	40	60	80	100	121	141	162					
	24	75	112	150	187	225	262	300	337	375			
	30	121	181	242	302	363	424	486	545	605	665	726	
	36	176	264	352	440	528	616	705	792	880	968	1056	1144
100	18	54	81	108	135	162	189	216					
	24	100	150	200	250	300	350	400	450	500			
	30	162	243	324	405	486	567	648	729	810	891	972	
	36	235	352	470	587	705	822	940	1057	1175	1292	1410	1527

For applications handling materials weighing more than 100 pounds per cubic foot, or extremely abrasive material, refer problem to plant engineers for proper recommendations, belt and idler selection, etc.

THESE pre-engineered selection tables are your head start to savings with Link-Belt PRE-BILT sectional belt conveyors. In ordering, in estimating, in purchasing and other steps as well—comparable cost shortcuts add up to substantial savings. And rugged design throughout keeps maintenance costs down even under severe operating conditions.

For complete facts and application data on Link-Belt PRE-BILT conveyors up to 36-in. wide—with drives up to 40 hp and 24 or 42-in. truss depths, contact your nearby Link-Belt office.



This installation is typical of the exceptionally rugged construction and versatile application of **Link-Belt PRE-BILT belt conveyors.**

NO DETAILED DRAWINGS — From standardized data, a Link-Belt engineer will prepare an "on-the-site" quotation covering the components for your needs.

LOWER PURCHASING COSTS — Interchangeability and standardization lower costs and speed selection of parts . . . all available from Link-Belt.

STANDARDIZED SELECTION...

Link-Belt PRE-BILT sectional belt conveyors

TABLE 3. Horsepower to drive empty conveyor.

Belt Width Inches	Horsepower to drive empty conveyor for each 100 FPM belt speed											
	Conveyor centers, feet											
	50	100	150	200	300	400	500	600	700	800	900	1000
18	.20	.30	.35	.40	.50	.60	.70	.80	.90	.95	1.00	1.20
24	.30	.40	.50	.60	.70	.85	1.00	1.20	1.40	1.50	1.60	1.70
30	.40	.50	.70	.85	.95	1.10	1.30	1.50	1.70	1.90	2.10	2.30
36	.50	.60	.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	3.00

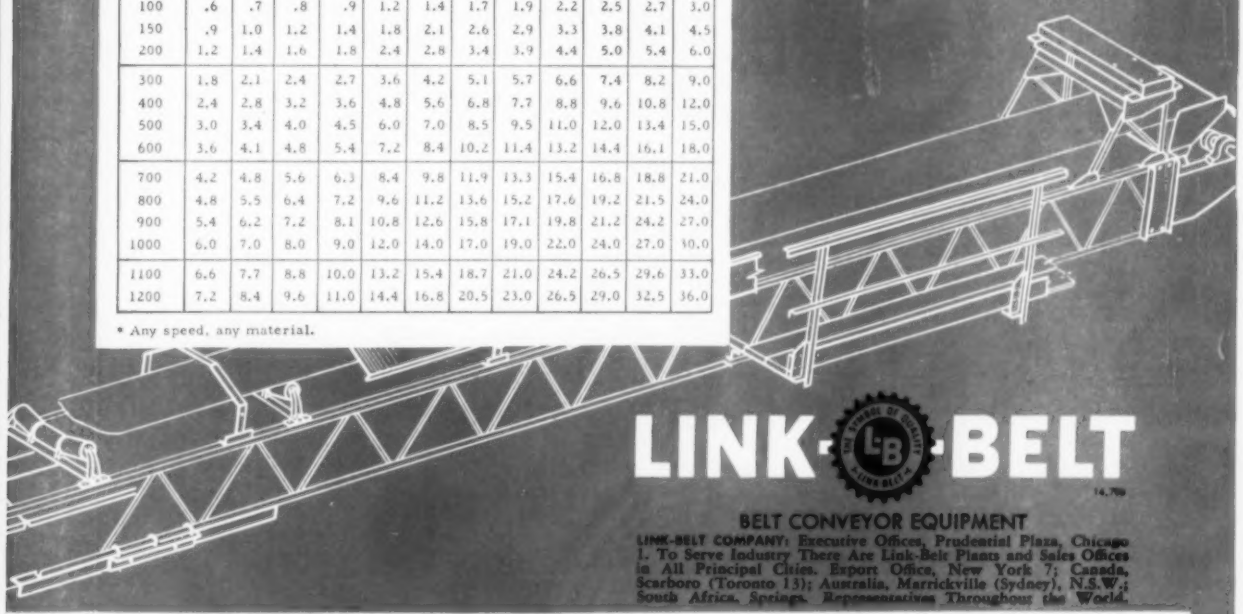
TABLE 4. Horsepower to convey material horizontally.

Tons per hour	Horsepower to convey material horizontally*											
	Conveyor centers, feet											
	50	100	130	200	300	400	500	600	700	800	900	1000
50	.3	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.4	1.6
100	.6	.7	.8	.9	1.2	1.4	1.7	1.9	2.2	2.5	2.7	3.0
150	.9	1.0	1.2	1.4	1.8	2.1	2.6	2.9	3.3	3.8	4.1	4.5
200	1.2	1.4	1.6	1.8	2.4	2.8	3.4	3.9	4.4	5.0	5.4	6.0
300	1.8	2.1	2.4	2.7	3.6	4.2	5.1	5.7	6.6	7.4	8.2	9.0
400	2.4	2.8	3.2	3.6	4.8	5.6	6.8	7.7	8.8	9.6	10.8	12.0
500	3.0	3.4	4.0	4.5	6.0	7.0	8.5	9.5	11.0	12.0	13.4	15.0
600	3.6	4.1	4.8	5.4	7.2	8.4	10.2	11.4	13.2	14.4	16.1	18.0
700	4.2	4.8	5.6	6.3	8.4	9.8	11.9	13.3	15.4	16.8	18.8	21.0
800	4.8	5.5	6.4	7.2	9.6	11.2	13.6	15.2	17.6	19.2	21.5	24.0
900	5.4	6.2	7.2	8.1	10.8	12.6	15.8	17.1	19.8	21.2	24.2	27.0
1000	6.0	7.0	8.0	9.0	12.0	14.0	17.0	19.0	22.0	24.0	27.0	30.0
1100	6.6	7.7	8.8	10.0	13.2	15.4	18.7	21.0	24.2	26.5	29.6	33.0
1200	7.2	8.4	9.6	11.0	14.4	16.8	20.5	23.0	26.5	29.0	32.5	36.0

* Any speed, any material.

TABLE 5. Horsepower to elevate material

Tons per hour	Horsepower to elevate material									
	Lift, in feet									
	10	20	30	40	50	60	70	80	90	100
50	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.6	5.1
100	1.0	2.0	3.0	4.0	5.1	6.1	7.1	8.1	9.1	10.1
150	1.5	3.0	4.5	6.1	7.6	9.1	10.6	12.1	13.7	15.2
200	2.0	4.0	6.1	8.1	10.1	12.1	14.2	16.2	18.1	20.0
300	3.0	6.1	9.1	12.1	15.2	18.2	21.1	24.0	27.0	30.0
400	4.0	8.1	12.1	16.2	20.0	24.0	28.0	32.0	36.0	40.0
500	5.1	10.1	15.2	20.0	25.0	30.0	35.0	40.0		
600	6.1	12.1	18.2	24.0	30.0	36.0				
700	7.1	14.1	21.0	28.0	35.0					
800	8.1	16.2	24.0	32.0	40.0					
900	9.1	18.2	27.0	36.0						
1000	10.1	20.0	30.0	40.0						
1100	11.1	22.0	33.0							
1200	12.1	24.0	36.0							



LINK-BELT

14,709

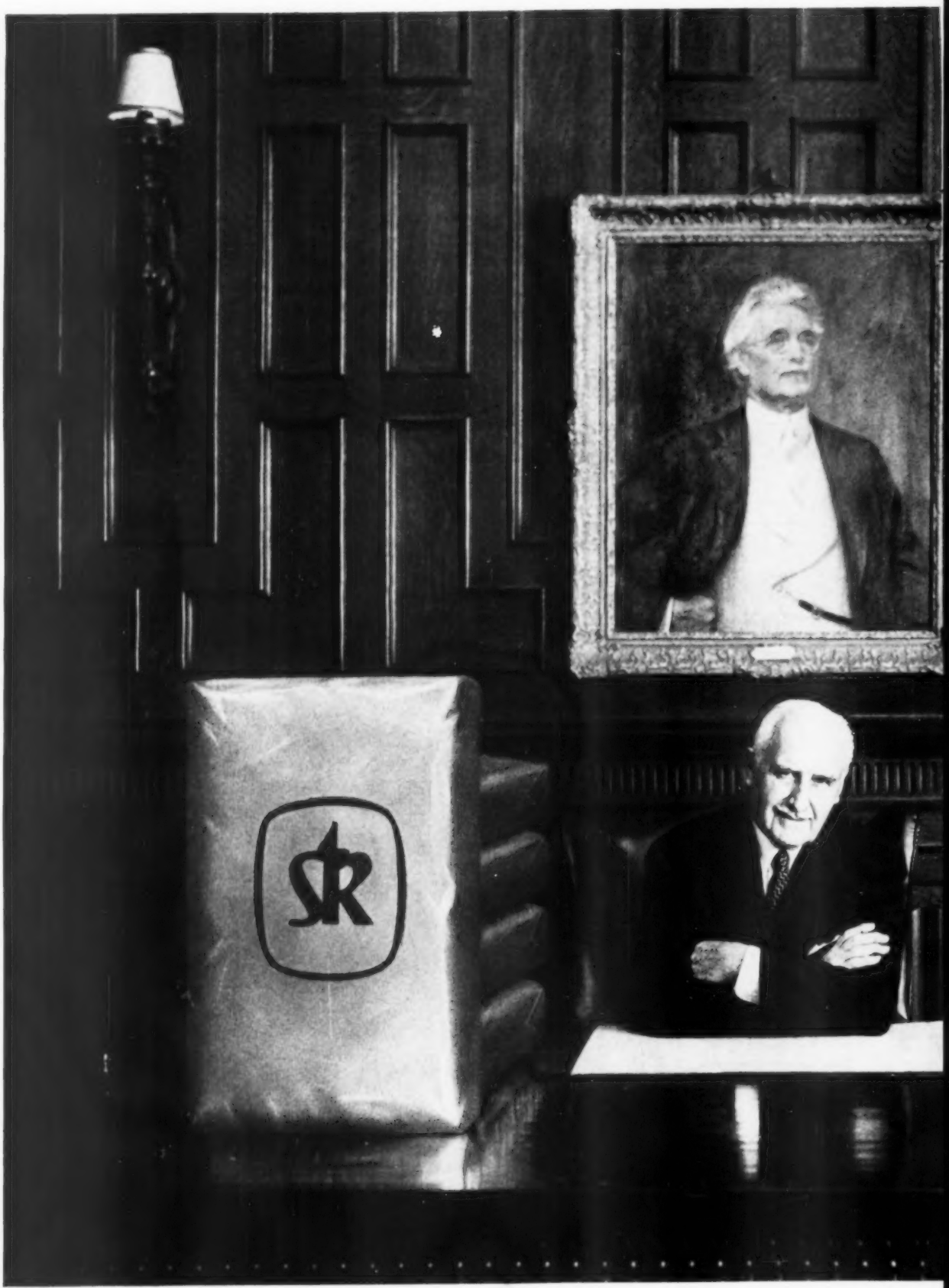
BELT CONVEYOR EQUIPMENT

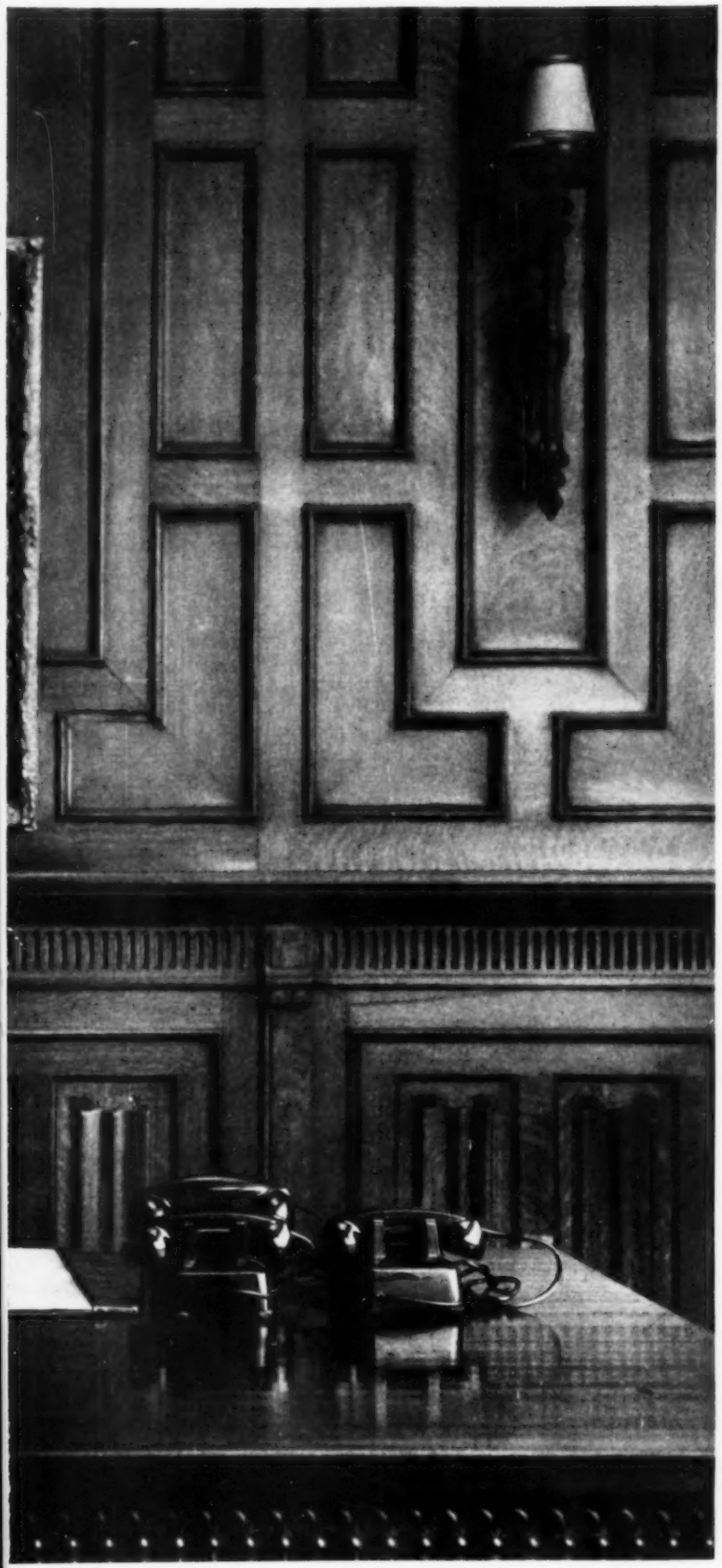
LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

NO COSTLY DELIVERY DELAYS—PRE-BILT conveyors are built at eight strategic locations and are shipped from the plant nearest you to assure prompt delivery.

QUICK-LOW COST INSTALLATION — Simple construction and shop-assembled components facilitate field assembly and installation by your own or Link-Belt erectors.

MINIMUM OPERATING COST— These conveyors require a minimum of power for the tonnages of materials handled. Maintenance normally consists only of lubrication.





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Enter 78 on card, page 105

Southwest Portland filters

Hot Kiln Gases in

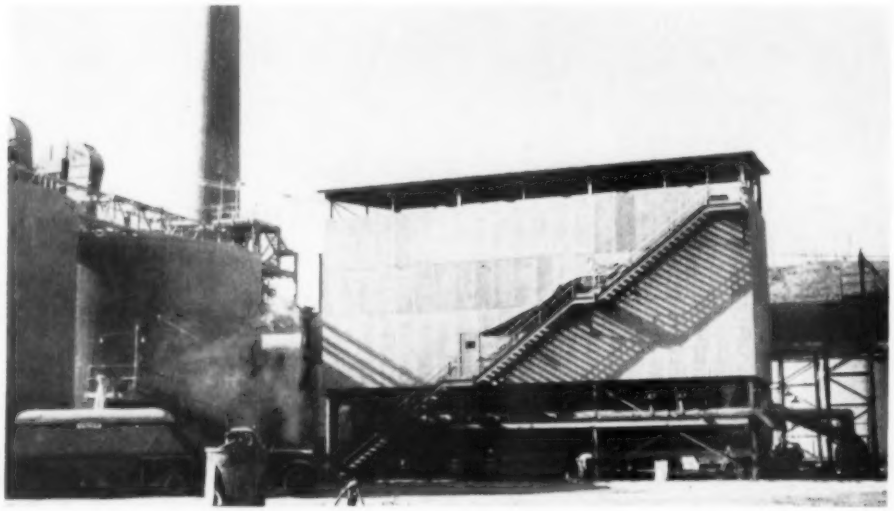
THE collection of the dust emissions from rotary cement kilns has long been a difficult problem which increases in severity as communities press for more effective abatement of air pollution. From a collection standpoint, the difficulty arises from the large volumes of gas involved, the heavy loading of very fine particulate matter, the high gas temperatures and, in the case of wet-process kilns, the presence of much water vapor.

The conventional cyclone collector scalps out a high percentage of the dust, but beyond this point the electrical precipitator and, to a much lesser extent, the wet scrubber, have been the only devices practically available and used to any extent for a final and complete cleanup.

When the executives of the Southwestern Portland Cement Company undertook, in 1956, to investigate the problem of collecting the dust from the wet-process kilns at their Victorville, Calif., plant, their engineering background led them to consider the use of a bag filter. This device, one of the oldest and simplest collectors, is capable of operating at high efficiency but is limited in its application by the types of filter fabrics available.

For example, the most widely used synthetic fabric for high temperature applications was orlon, which is normally limited to the range of 250 to 275 deg. F. Cooling kiln gases to this range is difficult without greatly increasing the volume of gas to be handled. Thus, the major problem is the temperature limitation of the fabric. If another medium could be found which could operate at, say, 500 deg. F., condensation would be avoided, and the necessity of cooling eliminated.

The use of woven glass fabrics having a special silicone treatment (which removed the previous difficulties associated with the use of glass in filtration) had been under development for some years. While it was not then widely known, these glass fabrics were working very successfully collecting many differ-

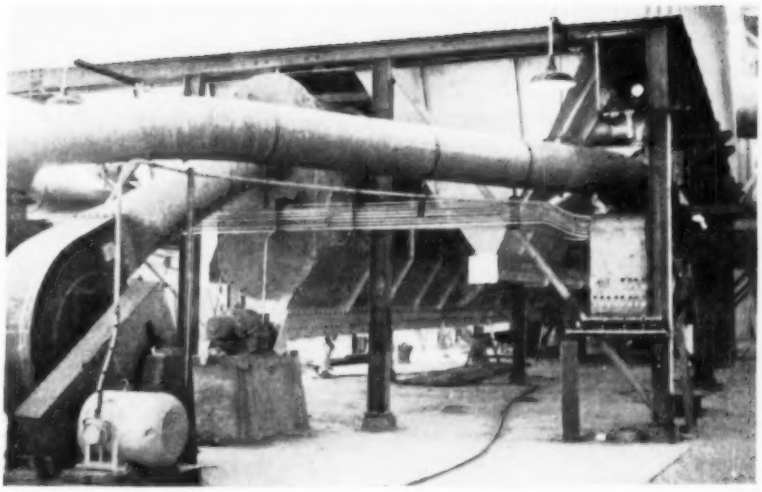


A general view of the new baghouse at Southwest Portland Cement Company's Victorville plant during operation. Filtered kiln gases are released into the atmosphere under the eaves at the top of the structure. At present no discharge is visible at any time. The slight rise of dust seen at the left was caused by removal of dust by the transfer screw. This system has since been replaced with a dustless slurry-mixer.

Glass Cloth Bags

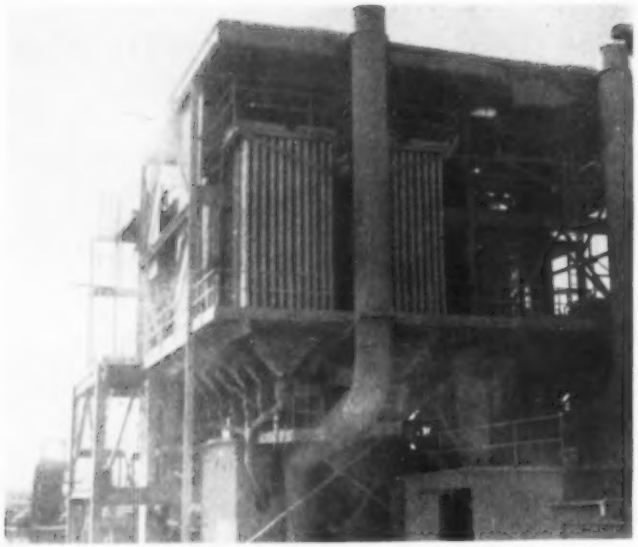
ent dusts at elevated temperatures. In some industries the glass filter bag had reached a high level of perfection, and it is now used very extensively. Certain of these applications are similar to the wet-process cement kiln in that the presence of high concentrations of water vapor make the maintenance of high baghouse temperature a matter of critical importance to prevent condensation and corrosion.

In mid-1956, therefore, Southwestern Portland Cement Company management decided to investigate the use of glass filter bags for application to the kiln gases at Victorville. A small pilot unit having a capacity of 500 to 600 c.f.m. was



Above: The auxiliary fan (left) below the baghouse which collapses the bags. The discharge is into the end of the balloon flue opposite the inlet end.

Left: This view, looking over the tops of the 576 glass-cloth bags at the Victorville plant shows the drawcord and clamp attachment over the aluminum caps. The picture was taken during operation.



The No. 4 kiln baghouse at El Paso is fitted with 792 glass-cloth bags measuring 6 in. by 16 ft. Since the picture was taken, the space at the right has been filled with 792 bags measuring 6 in. by 20 ft.

erected and connected to a main exhaust flue at a point where the temperature was about 500 deg. F. The baghouse and its fan and ductwork were heavily insulated to maintain a temperature as high as possible.

This test unit was started in October, 1956, and subsequently operated for about nine months at high efficiency. Moreover, it was soon found that the smooth, siliconed surface of the glass cloth shed accumulated dust so readily that no shaking was necessary. Instead, a simple collapse every 60 minutes, initiated by a reversal of pressure, resulted in an acceptable and uniform pressure drop.

These observations suggested the possibility of a very low-cost, high-efficiency device, but the effect of condensation remained unknown, and continuing tests were aimed at evaluating this aspect of the problem and the unknown factor of bag life under the particular conditions.

During subsequent months of testing, the bags at times were saturated with water from condensation during normal variations of atmospheric and kiln conditions and were even deliberately wetted. In all cases, rising temperature dried the bags and, at the next collapsing cycle, they discharged readily and returned to normal pressure drop. Inspection of the fabric showed that no binding had occurred; and the lack of deterioration suggested an entirely satisfactory bag life of at least one year.

Based on the data collected by the test work, it was decided to undertake the design and construction of a large unit capable of handling the entire emissions from one of the large kilns at Victorville. The baghouse went on stream in October, 1957, and has operated since that time almost without incident. A description of this installation follows:

Victorville Plant This plant operates a total of nine wet-process rotary kilns. Kiln No. 9, with which we are concerned here, is one of four kilns 10 ft. in diameter and 330 ft. long. Exit gases leave this kiln at about 800 to 900 deg. F.; they enter a housing and flow vertically to a multiple-cyclone-type dust collector. Dust collected here is added to the slurry feeder. About 95,000 c.f.m. of gas at 550 deg. F., leave the cyclones and flow downward to the inlet of the induced-draft fan. The fan discharges to a stack through a horizontal duct, 6 ft. 3 in. in diameter, in which a Y was fitted for diversion to the inlet of the baghouse.

The baghouse is a simple pressure-type unit containing 6 hoppers arranged in 2 parallel rows of 3 each. An inlet balloon flue extends horizontally between the 2 rows. Each hopper is partitioned into 2 compartments and each compartment is individually connected to the balloon flue through a short 24-in. diameter duct fitted with an air-operated, horizontally-acting, flat damper.

Dust disposal is by screw conveyors under each row of hoppers and under the balloon flue, all three emptying into a transfer screw.

Each compartment has 48 steel thimbles, 11½ in. in diameter, over which the glass-cloth filter bags are clamped. At their upper ends the bags are clamped to aluminum caps which hang rigidly from steel channels. Wide walkways around each group of 48 bags are provided at the thimble level and at a level a few feet below the caps for ready access and ease of installation. There are 576 bags in all; and, with an effective length of 25 ft., a total filtering area of about 43,000 sq. ft., is available. The baghouse is enclosed with corrugated asbestos siding to maintain gas temperature as high as possible, since this factor is of critical importance in view of the high content of water vapor in the gas. Filtered gas leaves through the open space between the sides and roof. Diffusion into the atmosphere is so rapid that no condensation occurs, and the discharge is normally completely invisible.

No shaking mechanism whatsoever is provided; the bags are discharged instead by a simple, periodic collapse. This is provided by an independent suction system. Each compartment is connected through horizontally-acting dampers to 20-in. ducts leading to the suction side of an auxiliary fan, which discharges in turn into the balloon flue. Thus each compartment has two dampers, one an inlet damper and the other a suction damper. Overall cycle is 60 min., that is each group of bags collapses once every hour.

The individual cycle requires about 1 minute in the following sequence; (1) the inlet damper closes and the compartment goes off stream; (2) the suction damper opens, creating a negative pressure in the individual compartment hop-

per and resulting in a positive bag collapse. (3) the suction damper closes, the bags are slowly re-inflated, and dust falls freely into the hopper; (4) the inlet damper opens, and the compartment goes back on stream.

During the period when both dampers are closed and before the compartment goes back on stream, gas from the adjacent compartment leaks in around the screw conveyor connection and slowly inflates the bags. This is important because it permits the free discharge of dust caught in the folds of the collapsed bag without the heavy de-entrainment that occurs when the bags are suddenly inflated. Bag stresses are also minimized.

The exact conditions in the baghouse are subject to variation in both kiln and weather conditions but an "average" is about as follows:

90,000 c.f.m. of gas at 510 deg. F. enters the balloon flue. Overall pressure drop across the bags is about 3 in. w.g., which has shown little or no change in 12 months of operation. Efficiency cannot easily be measured in this type of baghouse, but no visible discharge is detectable, and the bags have remained almost perfectly clean and white on the outside. A remarkable amount of diffusion of atmospheric air takes place in the baghouse, and it is possible to walk about freely at the thimble level without discomfort or danger. At the upper level the gases are mixed, and, as a safety precaution, entry is permitted only with a breathing apparatus supplying air.

Collected dust was originally wasted, but a mixer was devised permitting the dust to be added continuously to metered feed slurry and returned to the kiln.

The kiln shows remarkable indifference to the presence of the baghouse, although they are directly linked together. Normal variations in pressure exert no appreciable effect on kiln operation.

After 9 months of operation 16 bags of the 576 had been replaced. All 16 of these failures were studied and it was found that no failure had occurred from what might be construed as a general deterioration from heat or abrasion.

Southwestern has announced plans to build four more baghouses so that all dust emissions from the four long kilns will be under complete control. The new design incorporates no significant change in principle from the original.

El Paso Plant At Southwestern Portland Cement Company's El Paso plant there are four dry-process rotary kilns. Three are 10 (45.75) x 5 tap. x 8 (99.25) and one is 9 ft. by 150 ft.; all are gas-fired.

Three of these kilns discharged their exit gases into a common, brick-lined flue which led to waste heat boilers, followed by a precipitator. The fourth kiln used a separate system through a centrifugal collector to an I.D. fan and out of a separate stack. Two kilns were equipped with baghouses. The gases from centrifugal collectors were led down to the I.D. fan inlets at ground level, then upward to the baghouses, one for each kiln, on top of the entire structure. The baghouses were fully-exposed, pressure-type units, each fitted with 792, 6-in. by 16-ft. orlon bags with conventional vertical shakers. Two methods were tried to reduce the temperature of the gases to the maximum of 275 deg. F. at the baghouse inlet. The first of three—heat exchangers—proved impracticable, and the use of tempering air at the fan inlet was undesirable.

A careful study of the problems suggested that the use of glass-cloth bags might obviate the basic difficulty in cooling these gases. Fitting of the baghouses with glass bags was begun in January, 1957, and completed in February, 1957. However, 20-ft. bags were used instead of 16-ft. ones. In one unit the shaking mechanisms were completely removed and the bags discharged by a simple collapse.

As presently modified, suction for bag collapse is provided by an auxiliary fan through an entirely separate system, and the bags are cleaned on a 5-minute cycle.

No. 4 baghouse was redesigned for 11½-in. bags, and, by careful spacing, an equivalent cloth area was obtained. Other changes included an inter-connection between adjacent hoppers to permit gradual reinflation before coming on stream. This unit has been operating only a short time, but improvement was immediate. Bag pressure differential dropped from the range of 5 to 6 in. to 2 to 3 in., w.g. The improvement results solely from the better discharge characteristics of the larger bags, since all other factors of fabric design, cloth area, gas volume, temperature, and dust loading are essentially unchanged.

No. 1 baghouse continues at present to operate with 6-in. bags. The large majority of the bags are those originally installed. Aside from minor bag damage which has been repaired by patching, 117 bags had been replaced within 16 months because of extensive wind damage to exposed bags during shut-downs, to rubbing on steel supporting members, and to mechanical damage in handling. Despite the severe service, most of the original bags appear to be in fine condition.

Baghouse inlet temperatures are normally in the range of 600 to 700 deg. F., with an automatic by-pass for protection against extremes which may develop from interruptions in kiln feed. Moderate variations are controlled by automatic operation of a tempering air damper at the I. D. fan inlet.

In addition to the large installations described above, many test units of different sizes are operating or being planned in cement plants in the United States and abroad; and a number of full-scale installations of glass cloth baghouses are in the planning stage. Some of these will incorporate interesting variations such as a top inlet, which becomes simple when no shaking mechanism is required and results in a con-current downward flow of dust and gas. Most of these ideas have been thoroughly explored in other industries, as have the many possible variations of fabric design and bag construction.

Note: Additional information regarding the source of the glass filter bags furnished on request.

Auxvasse Stone and Gravel Company, Auxvasse, Mo., is erecting a large building which will house offices, a garage, and a warehouse. Prestressed concrete beams are being used in the roof construction.

Rivers to Roads

Federal Materials to meet highway

By BUREN C. HEROD

ANOTHER ON THE SPOT REPORT

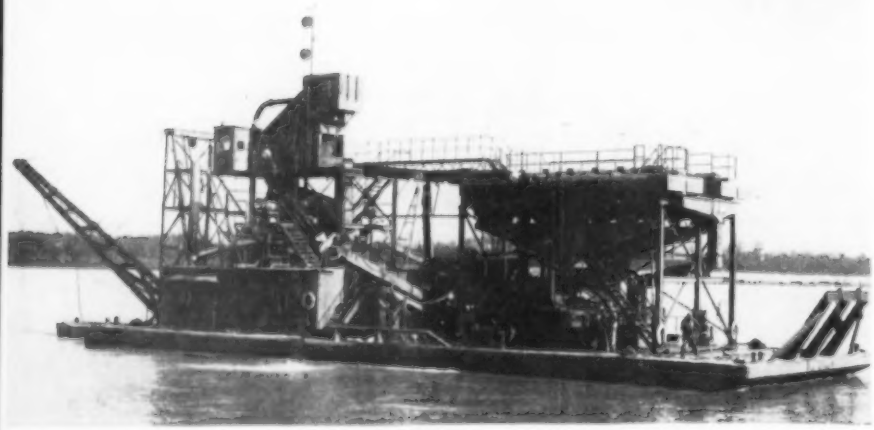
THE reams of glowing publicity attending the development and prosecution of the federal road program has evoked from many aggregate producers nothing more than a wait-and-see attitude—possibly because they're not sure there's much fire beneath all the smoke, because plant locations are too far removed from projected construction, or due to cynicism about the whole thing.

However, among the numerous operators who evince an optimism and eagerness for participation in the program, there are many who have "put their money where their mouth is." One of these is Norman L. Hely, president of The Federal Materials Company, a long established organization with operations and shipping facilities in Paducah, Ky., Cape Girardeau, Mo., and Metropolis, Ill.

A 1-year-old dredge and floating plant represents Mr. Hely's "bet" on the road program in his area. Not only is this new equipment, which operates in the Ohio and Tennessee rivers near Paducah, a tangible expression of his optimism, but it is also one of the more unusual of such production units from a design and operating standpoint. The flow and component equipment provides for the individual processing of either sand or gravel, and the ability to discharge finished products from the floating plant into barges located on either side or on both sides simultaneously.

Mounted on an all-steel hull, the plant includes stationary and vibrating screens, twin water scalping tanks, two coarse material washers, two fine material washers, retractable sand loading conveyors, and folding gravel loading chutes.

Development of this interesting facility stemmed from three primary factors — increased production capacity in view of the potential demands by highway construction; more rigid specifications established in the company's market area(those of three states are involved); and the need for a more efficient unit



For this photograph of the new Federal Materials dredge and floating plant in operation, the barge being loaded on the port side was moved. Sand can be seen dropping into the water as discharged from the port-side retractable loading conveyor. Processing equipment mounted on the deck includes a screen, below the pump box; twin water scalping tanks, aft; a pair of twin screw fine-material washers, below the tanks; two single-screw coarse-material washers on each side of the screen above the deck house; plus the dredge and accessory pumps in the deck house.

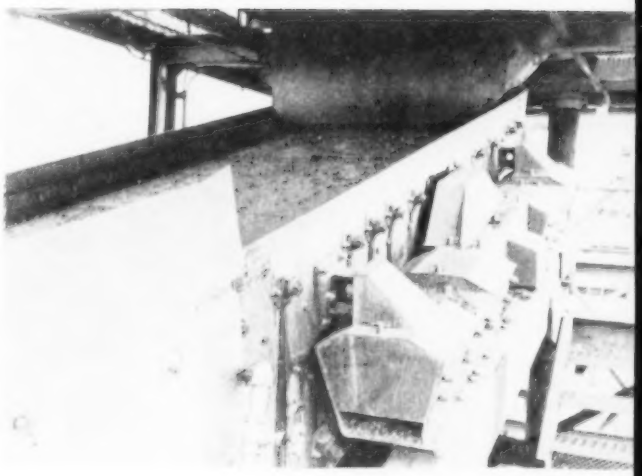
adds new floating plant

aggregate demands

than the older dredge and plant, of wood construction, which had been in operation for several years.

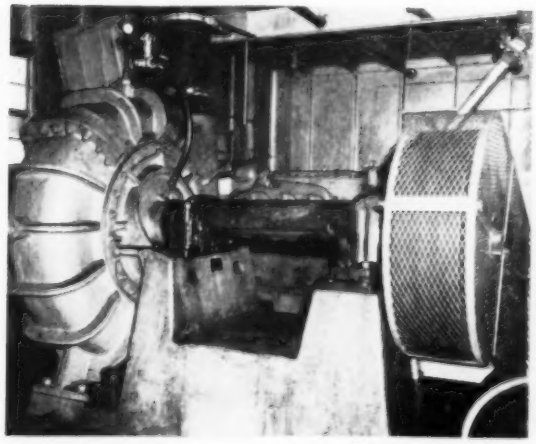
Built on a basic design developed by Mr. Hely, the new dredge and plant incorporate several of his original ideas, as well as improvements on the processing flow existing on the older dredge. While the latter has a gravity screening system, the new unit has classification equipment and greatly improved control over processing of concrete and mason sands—the basic products in normal operations. One-man control is provided at a station from which the operator can observe dis-

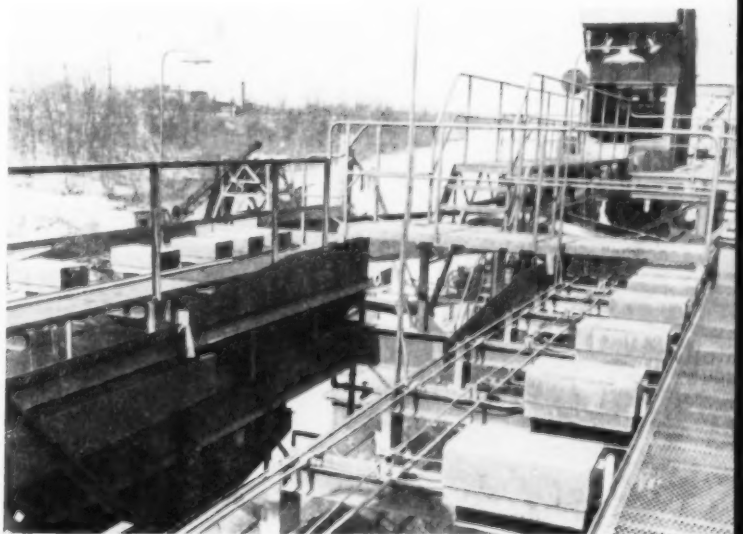
The plate seen on the vibrating screen (below the pump box) allows the gravel to pass to a waste flume when sand is being processed. During gravel production the plate is removed, and sand passes to waste from the pump box.



Below, right: During sand production the entire flow passing the inclined stationary screen in the pump box (right background) is flumed to the twin water scalping tanks (foreground).

Below: The dredge pump, with 12-in. intake and 10-in. discharge, operates at a normal rate of nearly 5,000 g.p.m., with drive from a 200-hp. diesel engine.





charge into the pump box and make appropriate adjustments to the position of the suction pipe head, the pumping rate, etc.

The hull, built by Maxon Construction Company, which also installed the various items of primary equipment on the deck, is 120 ft. long, 7 ft. deep (normal freeboard is about 4 ft.), and has a 40-ft. beam. The latter was required to support the high center of gravity and weight of the water scalping tanks. Eleven water-tight compartments are contained in the hull on which the sides are fabricated from ½-in. thick steel.

All equipment in the sand processing phase and most of the units in the gravel flow were supplied by Eagle Iron Works, whose engineers also aided Mr. Hely in detailing his basic design. The dredging pump, a Thomas Foundries unit with 12-in. intake and 10-in. discharge, has a performance and low maintenance record with which Mr. Hely has expressed considerable satisfaction. After a full year of operation, involving pumping abrasive solids at more than 250 t.p.h., no part replacement was required.

As indicated earlier, the dredge is operated in the Ohio and the Tennessee rivers. For primary production, involving sand fractions, dredging is done in the Ohio since only a nominal amount of gravel is encountered in this area. When gravel production is desired, the dredge is taken upstream in the Tennessee, above its confluence with the larger river. Dredging in the Ohio is conducted at different points between the Kentucky state line and the low-water mark on the Illinois side of the river, and within a radius of ½ to 2 miles from the company's shore installation on the river bank in Paducah.

While, ordinarily, the suction head is operated at a digging depth of about 15 ft., sections can be added to the suction line to allow digging down to a 75-ft. depth. The dredging pump, driven by a 200-hp. Caterpillar diesel engine, operates at a normal pumping rate of about 4,900 g.p.m. In terms of sand production, this represents approximately 260 t.p.h.

From the 10-in. discharge line entering the pump box, the material flows over an inclined 6- by 16-ft. screen, about 30 ft. above the deck, which is fitted with ¼- by 2-in. slotted wire screen cloth. Here the nominal amount of gravel found in Ohio River dredging is separated from the sand. The former is chuted to an underlying screen on which the upper deck is covered with a steel plate (during sand production), and the gravel passing over the plate enters a chute from which it is wasted to the river.

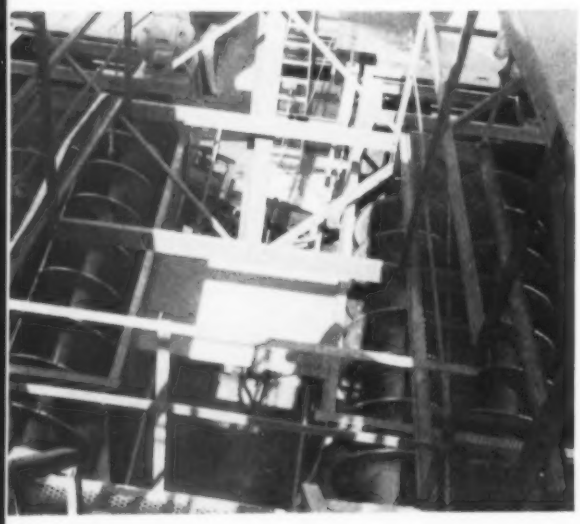
The sand is flumed from the pump box to the two parallel 32-ft. water scalping tanks. The latter are 9-cell units equipped with a triple collecting flume. Underflow from the tanks is fed to the respective one of two underlying 36-in. by 25-ft. double screw classifiers. One of these fine material washer-classifiers operates with a screw speed of 18 r.p.m., and processes concrete sand, while the other running at 15 r.p.m. produces mason sand.

Overflow from the scalping tanks and the two classifiers is flumed to a pipe passing through the hull and emptying into the river. The overflow flumes are made of sections so as to facilitate replacement of worn areas.

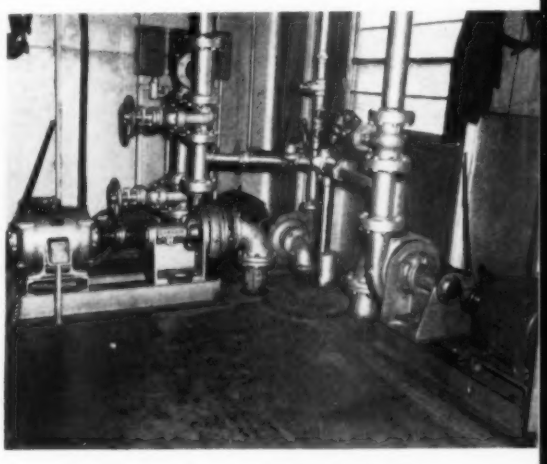
Process water added to the fine material washers (at 400 g.p.m.), and to the two coarse material washers described later, is provided by a pair of 6-in. Gardner-Denver pumps installed in the deck house. A companion 2-in. unit is a seal pump for the large dredge pump. These three draw from an underlying hull compartment in which ½-in. perforations were provided for entry of the water supply.

Sands discharged from the fine material screws are loaded into barges by an unusual and dual conveyor system designed by Mr. Hely. Two 24-in. belt conveyor assemblies—one on each side of the barge—were constructed as retractable units which can be extended 17 ft. on either side. When retracted, they are completely inboard, and allow free movement of barges alongside the dredge hull. The distance to which they can be extended puts the discharge point above the centerline of the barges being loaded. In addition, a 2-speed drive aids in giving the sand a trajectory, and facilitates loading trim.

When the plant is changed to



Left: A view from between the scalping tanks toward the underlying pair of twin-screw fine-material washers. Each of the latter discharges to its respective retractable barge-loading conveyor.



Right: In this battery of pumps are two 6-in. units that deliver process water to the appropriate equipment. The third is a seal pump for the large dredging pump. All three draw from an underlying perforated compartment in the hull.

gravel production, with dredging from the Tennessee River, as noted previously, the gravel retained on the pump box screen flows to the underlying vibrating screen (from which the steel plate has been removed), and the sand passing the top screen is flumed to waste. The vibrating screen, a 4- by 12-ft. double-deck Tyler Ty-Rock, is fitted with screencloth of 1½-in. openings on the top deck, and ½-, ⅝-, or ¾-in. on the lower, according to the material required.

Oversize retained on the top deck is chuted to waste, while the two fractions separated on the lower deck are chuted to the two coarse material washers. These 24-in. by 15-ft. single-screw units are of the trash-removing water-discharge type. Each is equipped with six sets of paddle flights on the conveyor screw and receives processing water at the rate of 400 g.p.m.

The gravel discharged from the washers is received on boom-supported folding chutes—one on each side of the hull—which load these materials into barges. During gravel pumping operations the floating plant has a capacity of about 160 t.p.h. in ¼- to ½-in. material.

In addition to the primary equipment described thus far, the dredge displays a number of other interesting and efficient features. All power required by equipment drives, plus lighting for 24-hr. operation, is provided by a 250-kw. Caterpillar diesel-electric set installed in the deck house. The complete Steger lighting system provides 25 kw. of illumination. Wiring for the latter, as well as up to motor leads, is installed completely in conduit. All walkways and floor areas above deck level are of expanded mesh iron work which allows loose material to pass to the deck, where it can be readily swept away.

Operation of this interesting new floating plant involves a 4-man crew. The remainder of the marine equipment operated in the Paducah area is comprised of a 450-hp. tugboat, ten all-steel barges, and the older dredge. With this equipment, the company also delivers sand and gravel to its Metropolis yard.

At the Paducah site the bargeloads of material brought to the riverfront docks are rehandled by a clamshell crane. The latter loads skip cars, which are pulled by cable up a skipway to the top of a group of storage bins.

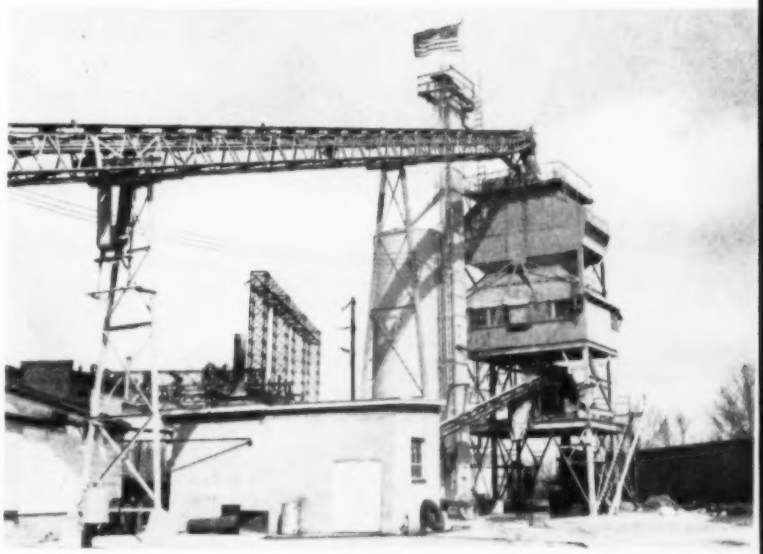
The company's riverfront property, which is only a short distance from down-town Paducah, provides an excellent location not only for marketing of its aggregates but also for the central-mix concrete plant that has been in operation here for several years. This plant, a C. S. Johnson installation, has produced concrete at the rate of 500 cu. yd. per day. The product is delivered by a fleet of 16 trucks, all equipped with Blaw-Knox mixers.

A long established organization, the company also has a long record of progressive management. Norman Hely, now president, was raised in the crushed stone industry. He is the son of Edward Hely, who founded the Edward Hely Stone Co. in 1882—a firm which merged with the old Ohio River Sand and Gravel Company in 1931 to become the Federal Materials Co. The Ohio River group had been operating in the Paducah area, while the company founded by the elder Hely had a quarry at Cape Girardeau, Mo.

As a younger man, Norman Hely first displayed the optimism concerning the aggregates producing industries which has continued all through the years, and finds its latest expression in the new dredge. He was one of the founding members of the National Crushed Stone Association, and suggested its official name.

Associated with him in the management of the company are Hal B. Hall, vice-president; and A. W. Zimmer Jr., secretary-treasurer.

A closeup of one of the retractable loading conveyors. Designed by Mr. Hely, these 24-in. wide assemblies can be extended 17 ft. to a point above the centerline of the barges.



Below: Located on the company's river front property near down-town Paducah, this central-mix plant has supplied local construction with as much as 500 cu. yd. daily.

Left to right: Tom Davis, dispatcher; Ellis Hall, vice-president; H. O. Tucker, office manager; Walter Thayer, plant superintendent.

Small Western Gravel Boasts Big-Time

50-t.p.h. operation has rod mill, liquid cyclone, dust-collecting system with universal flexibility

ANOTHER ON THE SPOT REPORT

CARLSBAD, New Mexico, is a thriving little metropolis in the great American Southwest. Its chief claim to fame, perhaps, is its proximity to Carlsbad Caverns, which is visited by hundreds of thousands of tourists annually. Carlsbad is also the potash capital of the nation, more than 90 percent of the country's entire output coming from the mines near the city. These two underground attractions—the caverns and the mines—affect the economy of most of Carlsbad's 18 000 citizens, and the city has enjoyed a healthy, stable growth in recent years.

Contributing in large measure to Carlsbad's growth—its new buildings and improved highways and streets—is the Carlsbad Transit Mix Cement Company, Inc. This 10-year-old concern's product is not limited to ready-mixed concrete, as its name might imply. It produces enough washed sand and gravel to supply the commercial demands of the community plus captive tonnage for its own ready-mix.

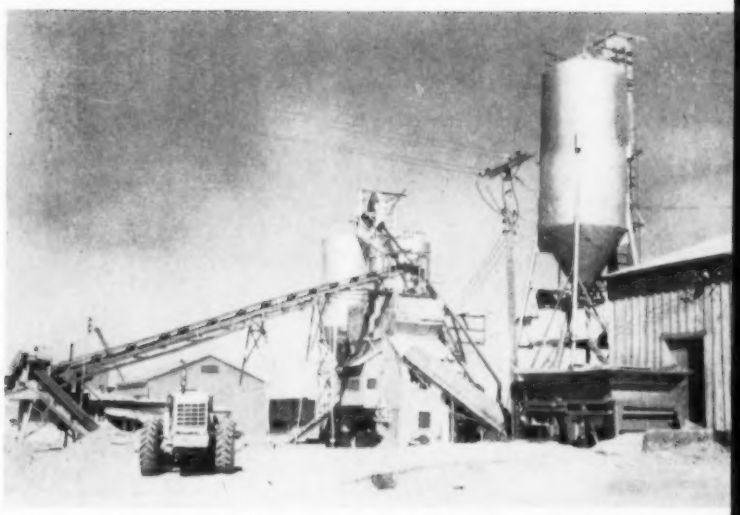
While output is relatively small, being geared to the size of the town, the plant setup is quite remarkable for its flexibility and versatility. In addition to its permanent ready-mix plant, the company has stand-by batching facilities which can quickly be pressed into service to meet any special requirement or demand. The company has, on occasion, batched, mixed, and delivered as much as 1,000 cu. yd. of concrete in a single day—a quantity which was expressed locally as sufficient material to lay a 5-ft. sidewalk nearly 4 miles long!

What the concern's 50-t.p.h. sand-and-gravel plant may lack in capacity is overshadowed by some unexpected processing refinements. Although primarily engaged in turning out a batch-plant coarse-aggregate blend in the minus 1¼-in. plus 5/16-in. range, and a minus 5/32-

A general view of the sand-and-gravel processing plant at Carlsbad. The stacker belt at the left builds the sand storage pile; the one at the right stockpiles coarse aggregate.

Plant Refinements

By HARRY F. UTLEY



Main and, in foreground, auxiliary batching plants are each equipped with bulk-cement silos. At left is front-end loader which feeds sand via short belt shown to the conveyor running up to the batch-plant bins.

in. sand, it can readily produce almost any end product imaginable through optional recirculation of product.

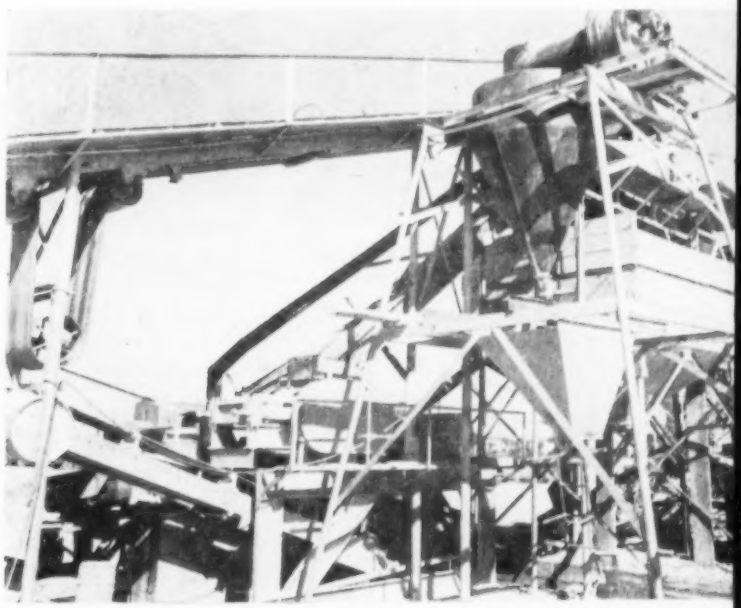
Other interesting features include the following: a rod-mill in the circuit to grind sand from surplus small gravels; a liquid cyclone which extracts remnants of the fine-sand traction from classifier overflows; and a dust-collecting system connected to the crushers and transfer points where dust arises. Features such as these are seldom encountered in the high-output plants in and around large metropolitan centers.

Aggregate-processing and ready-mix operations are centered in the company's yard at the southern edge of the town, where two main highways join. The river-bed pit, however, is located about 1½ miles away in Dark Canyon. Pit-to-plant haulage is handled by two 15-ton Schonrock diesel-powered truck-trailers. These units are loaded by the pit excavator, a 1¼-cu. yd. Bay City electric shovel.

A Barber-Greene reciprocating

The cyclone dust collector with its suction fan above. Note the piping connections to the roll-crusher and hammermill.

Below: The rod mill and liquid cyclone, shown in relation to the high- and ground-level drag-type classifiers.



CAT D8 TRACTOR-NO. 463 SCRAPER DIGS PROFITS OUT OF ALABAMA QUARRY

Cat D8 Tractor-No. 463 Scraper stripping overburden in mining operation near Tarrant, Ala. The haul averages 300 ft.

"I like the performance of our Caterpillar equipment," says John N. Cushman, general superintendent of the Dolcito Quarry Co., Tarrant, Ala.

Mr. Cushman is praising a Caterpillar team that is daily producing in excess of 2,000 tons of dolomite used for concrete aggregate, agricultural limestone, fluxing stone and rock dust.

A Caterpillar D8 Tractor with No. 463 Scraper strips overburden that ranges from 12 to 28 ft. thick. A Marion Back Hoe powered with a Cat D315 Engine assists in this function. The stone then is shot at a depth of about 50 ft., and a D7 pushes the rock to the quarry floor.

The D8-No. 463 combination is ideal where power and traction are needed for a short haul. The No. 463 Scraper, with all the fast, easy loading characteristics of LOWBOWL design, has a capacity of 18 cu. yd. struck, 25 cu. yd. heaped. It has straddle-mounted rear wheels with adjustable axles, high apron lift, protected cables—all the features that have made Caterpillar LOWBOWL Scrapers famous for high production.

The D8 packs 191 flywheel horsepower and 155 HP at the drawbar. It's tough, from track shoes hardened by a "water-quench" process to rugged diesel engine that uses low-cost fuels without fouling. And you have your choice of two models: torque converter drive and direct drive with the exclusive Caterpillar oil clutch.

Your Caterpillar Dealer has facts and figures showing how these big yellow machines can make a quarry operation more profitable. Ask for a demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

THE NO. 1 TRACTOR-SCRAPER COMBINATION

feeder transfers materials from the plant receiving hopper to a 20- by 36-in. Universal primary jaw-crusher which reduces to a 2½-in. top size. After this initial pass, the material is carried up by a 24-in. by 80-ft. belt conveyor to the screening tower, which houses a 4- by 10-ft. Simplicity triple-deck screen and a Diamond 3-deck unit. All gravel is sized and washed here, although a good portion of oversize is first rejected for secondary reduction either in a Jeffrey B3 hammermill or through a pair of 18- by 30-in. Pioneer double rolls which may or may not be closed-circuited with the screens, at option. As much as 85 percent of the finished coarse aggregate may possibly be in the form of crushed gravel.

Pea gravels (minus ⅜-in. plus ⅛-in.) retained on the lower deck of the Simplicity screen constitutes the rod-mill feed. This 4- by 7-ft. Denver peripheral-discharge unit, was placed in operation in 1954 to grind sand to make up for a deficiency in the pit run. Company cost records show that the ground sand saves about $1.50 per ton over the cost of the fine natural sand formerly trucked in from a distant source. Feed to the rod-mill is in the 10- to 12-t.p.h. range.

There are two 36-in. by 20-ft. company-designed drag classifiers which dewater the sand. One of these is mounted on the plant structure about 25 ft. above ground level. This one handles the minus ⅛-in. sand passing the screens. The other drag, located at ground level, handles the rod-mill product. Sand coming off the upper end of the high-level drag is chuted to the ground-level unit to join the rod-milled sand for blending and dewatering before it is stockpiled. The 24-in. liquid cyclone was designed by company personnel. It is mounted above the final drag dewaterer at ground level and is fed by gravity from the overflow of the high-level drag. No pump is needed, and up to 3 t.p.h. of clean fines are recovered as cone underflow. Waste water is piped to a settling pond for re-use; fresh water is purchased from the municipality.

The main batching plant has five bin compartments for aggregates. Coarse aggregates come up to the bin by a belt conveyor which reclaims them by gates in a tunnel beneath the piles. A Hough Payloader feeds sand to a short belt, which transfers onto the main belt running out of the gravel-reclaim tunnel.

Distribution to the bin compartments is by turn-head controlled from the batching floor. The Butler weigh-batching equipment is manually operated, the truck-mixer fleet consists of nine units, made up of five Challenge and four Jaeger mixers.

The semi-portable auxiliary weigh-batcher incorporates weighing equipment built for the purpose by the Thurman Machine Company of Columbus, Ohio. It loads the dry-batched ingredients into the truck-mixers via a high-speed belt conveyor; water is added at the mixers.

Most of the conveyors are equipped with Goodyear belting. A preventive maintenance program includes regular hard-facing with Ranite BX rod. Crusher rolls, hammers, and other equipment subject to abrasive wear are treated.

E. W. Douglass is president of the company. Ellis Hall is vice-president and operations manager, and Walter Thayer is plant superintendent.

$250 Scholarships Awarded By N. Y. Trap Rock Corp.

Scholarships have been awarded to two members of the graduating class of the Haverstraw-Stony Point High School, N. Y., by the New York Trap Rock Corporation. The $250 Wilson P. Foss Sr. scholarships have been awarded each year since 1954 to two outstanding members of the school's graduating class, in memory of the firm's founder.

Marilou Wright of Garnerville and Patsy Spicci of West Haverstraw, N. Y., were the 1958 recipients.

National Gypsum Company Acquires Ceramic Tile Firm

National Gypsum Company, Buffalo, N. Y., has completed the acquisition of the American Encaustic Tiling Company Incorporated, a producer of ceramic tile. American Encaustic will be operated as a subsidiary corporation under its present organization.

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BEST BUY IN NEW AND USED EQUIPMENT

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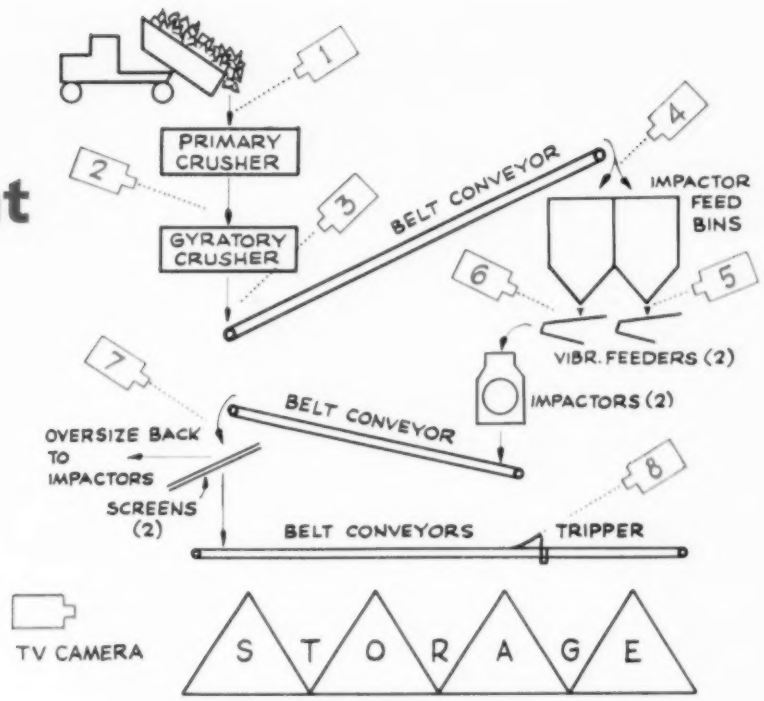
Visual Remote Control Saves at California Portland's

TV units enable one operator to see and control

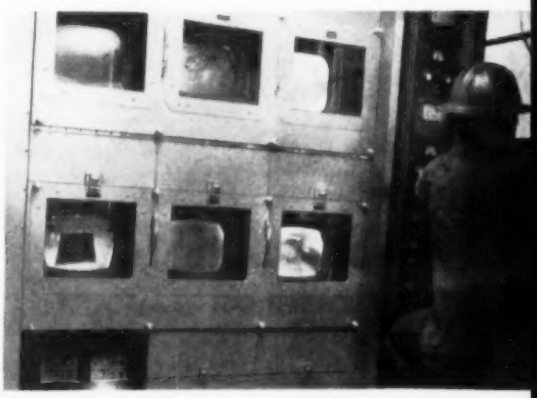
primary crusher feed
secondary crusher feed
secondary crusher discharge
reduction crusher storage
reduction crusher feed
scalping screens
finished material storage

Man Power Mojave Plant

By HARRY F. UTLEY



Sketch of a TV camera arrangement at the Creal plant.



The six monitors are housed in a dust-tight, refrigerated cabinet alongside the operator's control panel in the primary crusher building. From this point, all operations in the crushing circuit are controlled.

ANOTHER ON THE SPOT REPORT

CALIFORNIA Portland Cement Company has placed in operation what is perhaps the most extensive visual remote-control system in the cement industry at its Creal plant, west of Mojave, Calif. Increased production, overall operational efficiency, and a considerable saving in man power are expected to result from the system.

Under the system, which became operative in July, 1958, eight industrial television cameras placed at strategic points in the rock-crushing circuit and six monitors grouped together in the primary-crusher operator's control house enable the operator constantly to observe the flow of rock at various critical points, from the discharge of the quarry trucks to the storage of the finished stone.

The TV cameras are positioned at the following locations:

Camera No. 1—Primary jaw crusher

Camera No. 2—Secondary gyratory crusher

California Portland Cement Company's five-kiln plant near Majave, Calif., has a clinker capacity of 17,500 bbl. per day.

Camera No. 3—Above the belt-conveyor leading from the secondary crusher to the impactor feed bins

Camera No. 4—Above the impactor feed bins

Cameras No. 5 and No. 6—Impactor vibratory feeders

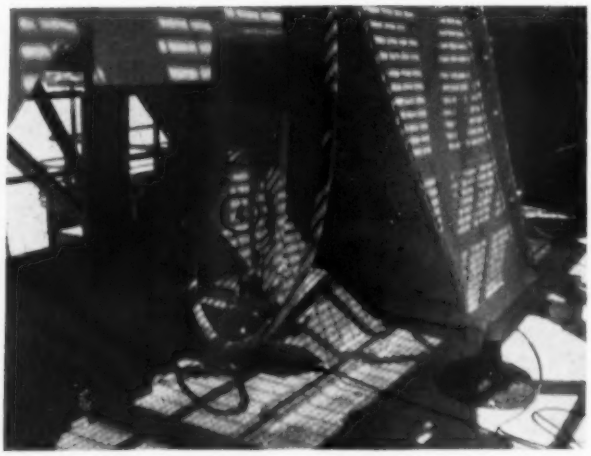
Camera No. 7—Above the screens, which are closed-circuited with the impactor

Camera No. 8—Above the distributing belt in the storage building.

By this modern closed-circuit television system, the crusher operator can keep the circuit functioning properly by observing all stages and thus avoiding jams and spillage before they can reach shut-down proportions. From his control board he can instantly start, stop, or regulate the operation of any piece of equipment in the crushing circuit, and he can see that the finished crushed material is properly piled in the storage structure.

There is one monitor for each of the first five cameras. The last three cameras transmit their images as desired by way of a special camera switcher, to the No. 6 monitor since continuous viewing with No. 6, No. 7, and No. 8 was not considered necessary.

Camera No. 1 is located at a point high up near the roof over the primary jaw crusher to observe the truck discharge into the crusher



Above: Camera No. 4, enclosed in a dust-proof housing, is trained downward into the feed bins, ahead of the impactor vibratory feeders. All other units are also in dust-proof enclosures.

Left: Camera No. 1 is mounted at the top of the opening where the quarry trucks enter and deliver stone into the primary jaw-crusher.

opening. Camera No. 2 looks into the feed opening of the gyratory crusher at close range so that choke-ups can be avoided. Camera No. 3 watches the conveyor running from the secondary crusher to the impactor feed bins, enabling the operator to regulate the flow and prevent spillage.

Camera No. 4 observes the level of the material in two impactor feed bins and allows the operator to divert the flow to either bin. Cameras No. 5 and No. 6 keep the vibratory feeders beneath the bins under surveillance so that the operator can regulate the feed flow to the impactors; he does this by remote control by turning a knob on his panel board. Camera No. 7 is mounted in the upper part of the screening building for visual observation of the screening operation.

Camera No. 8 is positioned high up in the storage building. Remote pan-and-tilt controls of this camera enable the crusher operator to train the lens on any position along the tripper-equipped distribution belt, as well as on other points in the storage area.

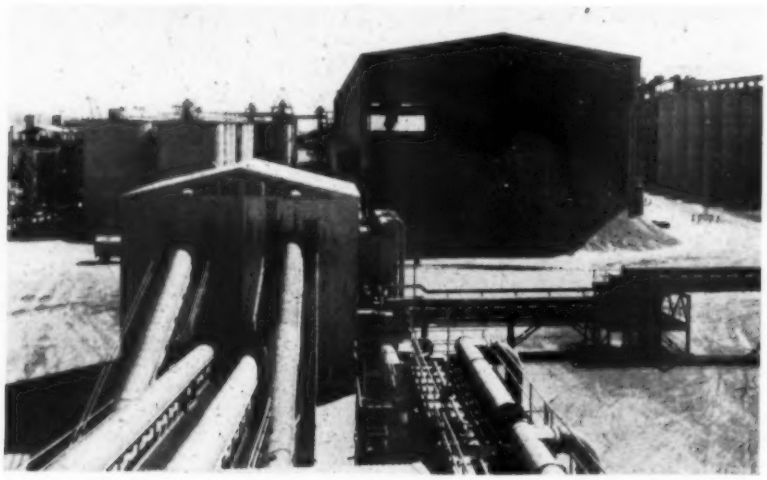
Remote iris control allows the operator to compensate for changes in light intensity which may occur during the day at some camera positions. Wide-angle or close-up viewing is controlled electronically at the touch of a button by the operator.

The six monitors are housed in a 7- by 8- by 3½-ft. dust-tight, refrigerated cabinet to dissipate the heat; they employ 12- and 14-in. picture tubes. Images on the monitors are extremely sharp, clear, and well-defined. The monitor cabinet is conveniently located alongside the control panel.

The Creal plant is a 5-kiln dry-process operation having a clinker capacity of 17,500 bbl. per day

Cameras No. 5 and No. 6 are shown here, aimed at the two vibratory feeders which supply the impactors.

The storage building is flanked by the blending tanks on the left and the finished-cement silos on the right. Camera No. 8 is inside the storage building. This camera has pan-and-tilt remote control.



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Built in 1955, the plant initially had two 11- by 350-ft. kilns. Shortly thereafter it was decided to expand the facility by adding three kilns of identical size, plus the necessary grinding equipment and storage capacity. The mill building presently houses ten 1,000-hp. ball-mills for raw and finish grinding.

Although located in a remote desert-mountain area, the plant is a remarkably dust-free operation. Kiln gases are treated by combination multiple-cyclone and electrical-Kiln gases are treated by combina-precipitator collectors. The 36 finished-cement storage silos have a total capacity of about 400,000 bbl. Together with the company's plant at Colton, Calif., and that of its subsidiary, Arizona Portland Cement Company, Rillito, Ariz., the combined capacity is about 13,000,000 bbl. annually.

Design of the Creal plant was developed by the company's own engineering staff and the Donald R. Warren Company. Construction was carried out by the L. E. Dixon Company of Los Angeles. The closed-circuit television system was installed by Reeves Electronic Corporation of Hollywood.

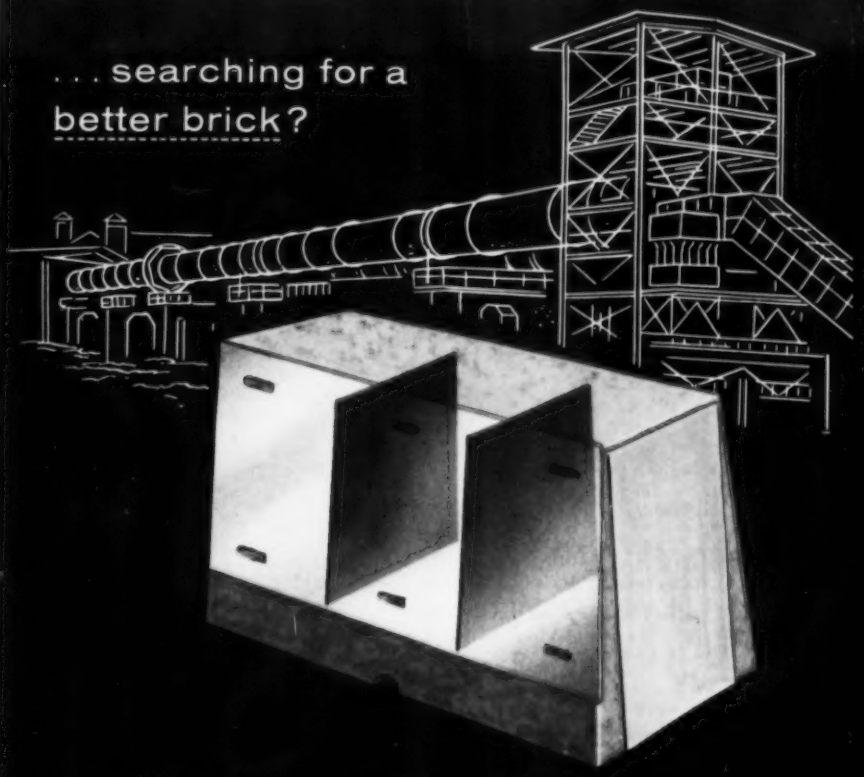
Quest for High-Purity Silica Slated by Bureau of Mines Among Fiscal 1959 Plans

A quest for new sources of high-purity silica, particularly in the Pacific Northwest, is included in plans of the U. S. Bureau of Mines in fiscal year 1959, which began July 1.

The Bureau points out that rapid industrial growth of the Pacific Northwest has speeded depletion of commercially developed silica deposits in the area and simultaneously has created increased demands for such materials for present and future use.

Field examinations of silica occurrences made by the Bureau, and related laboratory testing of specimens, will evaluate formations as to their commercial potentialities not only for glass-making and ceramic uses, but also as raw materials for making ferro-silicon and for other uses. One phase will involve investigation of a photometric method for rapid determination of iron content.

. . . searching for a better brick?



STEELKLAD-EE

the original internally plated brick . . .

Burning zones of portland cement rotary kilns—seared by tongues of flame 30 or 40 ft. long and handling routine temperatures of 2800°F. or more—pose supremely tough tests for refractories.

In STEELKLAD-EE (the newest type of basic refractory brick with steel plates bonded to it as integral parts) Grefco has produced for the cement industry a superior refractory with significant advantages:

1. *Lower thermal conductivity than burned brick*
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4. *Double steel plates in radial joints*
5. *Superior coating characteristics (for faster clinker coating build-up, longer life)*
6. *Built-in expansion allowance (cardboard expansion strips attached)*

The cut-away view above shows how STEELKLAD-EE's exclusive internal bonding molds the steel plates right into the brick itself, making three bricks of one. These smaller refractory units are better able to withstand the punishing cycles of heating and cooling—mean longer life, fewer shutdowns. STEELKLAD-EE is a *better brick*, any way you view it!

GREFCO

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• Please consult your local Grefco representative for advice on any of STEELKLAD-EE's numerous applications. STEELKLAD-EE brick is available from Grefco plants in Baltimore, Gary, Los Angeles, and in Smithville, Ontario.

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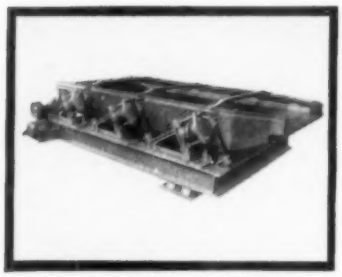

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Belt or Chain Type Bucket Elevators all engineered and constructed per specifications.

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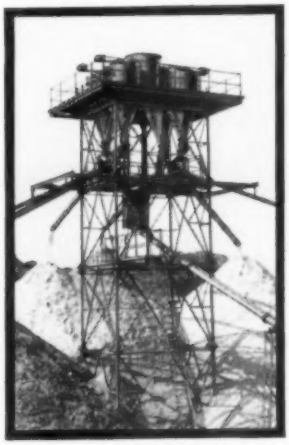
Suction and Discharge Hose, Dredge Pipe, Hose Clamps, Pipe Fittings, Flap Valves, Elbows, Reducers, Water Pumps, Hoists, Couplings, Motors, Speed Reducers, Bearings, Pillow Blocks, Sprockets, Sheaves, Pulleys, Idlers, V-Belts, Conveyor Belts, Chain, Buckets, Bin Gates, Vibrators, Screens, Crushers, Classifiers, Dewatering Drags, Elevators, and Wheels.

SPECIALIZED EQUIPMENT

Beside our standard items, we are adept at manufacturing special non-standard or non-production equipment due to experienced engineering and low overhead costs. Whether it is precise machining or rugged fabrication, on new equipment or repairing a breakdown, our flexible facilities and managements' personal attention combine to completely meet your specifications.



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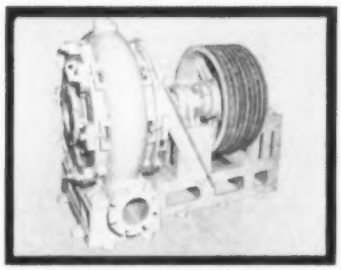

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Preliminary 1957 Nonmetals Reports On Seven S. E. States and Vermont

Preliminary statistics for 1957 have been released by the Bureau of Mines on the value of mineral production in seven southeastern states and Vermont.

Alabama The value of mineral production in Alabama in 1957 was $200,788,000, compared with $189,186,000 in 1956, according to estimates of the U. S. Bureau of Mines. This represents an increase of 6 percent over 1955, and establishes a new annual record. The increase was due mainly to greater production of coal and crude petroleum.

Shipments of masonry and portland cements decreased 15 percent, due to a general strike. Shipments of puzzolan cement increased 4 percent and lime production increased 13 percent. Sales of sheet mica were about the same, while scrap mica production expanded 50 percent. Sand and gravel production increased 1 percent and set a new annual record. Crushed limestone production increased less than 1 percent, but also reached a new peak.

Florida Mineral production of Florida in 1957 is estimated at $132,308,000, a decline of 6 percent from 1956. Production figures for 1957 are based principally on advance estimates by producers, together with other data available at the time of publication.

Marketable production of phosphate rock showed the greatest decline, $7,700,000 or 10 percent, followed by clays, down $1,970,000, or 34 percent, with cement and titanium 6 percent lower than in 1956.

Sand and gravel tonnage increased 5 percent, with value virtually the same as the previous year.

Stone recorded the greatest increase (16 percent) in production exclusive of oyster shell and gained 9 percent in value.

Mineral Production in Alabama, 1956-57[1] Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Cement:				
Masonry, 376-lb. barrels	1,753,201	$ 6,584,774	642,000	$ 2,196,000
Portland, 376-lb. barrels	12,311,520	35,255,585	11,272,000	33,478,000
Lime	466,399	5,088,695	528,500	6,780,650
Sand and gravel	4,998,888	4,621,469	5,029,000	4,446,000
Stone[3]	12,342,635	14,702,153	9,923,000	12,447,000
Talc	2,200	4,500	1,200	2,400

[1] Production as measured by shipments, sales, or marketable production (including consumption by producers).
[2] Estimated from producers' reports and other sources.
[3] Excludes dimension limestone, dimension marble, and oyster shell (1957).

Mineral Production in Florida, 1956-57[1] Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Lime	39,542	$ 490,086	39,500	$ 506,800
Phosphate Rock...Long tons	11,822,145	74,289,758	10,599,000	66,589,000
Sand and gravel	5,814,686	5,033,475	6,101,000	5,011,000
Stone	18,778,632	25,183,165	[3]21,807,000	[3]27,456,000

[1] Production as measured by mine or plant shipments or marketable production (including consumption by producers).
[2] Estimated from producers' reports and other sources.
[3] Incomplete total.

Mineral Production in Georgia, 1956-57[1] Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Sand and gravel	2,425,832	$ 2,183,260	2,240,000	$ 2,115,000
Stone	9,196,065	[3]20,713,651	11,763,300	26,412,000
Talc	57,916	122,166	38,500	84,000

[1] Production as measured by mine or plant shipments or marketable production (including consumption by producer).
[2] Estimated from producers' reports and other sources.
[3] Incomplete total, excludes crushed marble and crushed sandstone (quartzite).

Georgia Mineral production in Georgia increased by 5 percent in 1957, totaling $71,100,000, compared with $67,900,000 in 1956, according to the U. S. Bureau of Mines.

Total stone production, including crushed marble and quartzite, increased 10 percent in tonnage and 5 percent in value over 1956. Sand and gravel declined 8 percent and 3 percent respectively in tonnage and value. Portland and masonry cement also declined 8 percent in tonnage and value.

Other minerals showing increases in tonnage and value were barite, feldspar and slate; bauxite was higher in tonnage but considerably lower in value.

Kentucky In 1957 the value of mineral production in Kentucky was $457,738,000, compared with $443,168,000 in 1956.

This represents an increase of 3 percent over 1956; the total value was only 10 percent below 1948, the record year.

Shipments of masonry and portland cement decreased 13 percent due to a general strike. Clay production decreased 14 percent, owing mainly to decreased production of miscellaneous clay. Fluorspar shipments increased 9 percent, owing to increased production at the new Dyer's Hill mine of Calvert City Chemical Company. Sand and gravel production decreased 2 percent, while stone production increased 2 percent, owing to greater demand for crushed limestone.

North Carolina The value of mineral production in North Carolina in 1957 remained virtually the same as in 1956.

Total stone production, the state's most important mineral in terms of value, increased 21 percent in tonnage and 18 percent in value, crushed granite and limestone accounting for the increase. Dimension granite and crushed traprock were down considerably below 1956. Sand and gravel, although 5 percent lower in tonnage was 4 percent higher in value. Total mica production was about the same as in 1956; scrap mica showed some increase but was offset by lower sheet production. Talc and clay production were also lower in tonnage and value; crude feldspar tonnage increased 2 percent in tonnage but dropped 5 percent below 1956 in value.

South Carolina The mineral production of South Carolina in 1957 was estimated at $23,400,000, an increase of 10 percent over the $21,300,000 recorded in 1956.

Stone led the advance with an increase of 13 percent in tonnage and 15 percent in value, and totaled 4,500,000 tons, valued at $6,100,000 in 1957. Cement production also increased 4 percent in tonnage and 8 percent in value. Sand and gravel, however, decreased 13 percent in tonnage and value below 1956.

Total clay production was about the same. Kaolin showed an increase of 17 percent in tonnage and 28 percent in value, partially offset by losses of 10 percent and 30 percent respectively in tonnage and value of miscellaneous clay.

Barite output declined 10 percent but its value was up 13 percent. Kyanite was little changed from 1956, and vermiculite declined 6 percent.

Titanium production increased 33 percent, with a 6 percent drop in value; monazite was almost double that of 1956, and initial production of zircon was reported in 1957.

Tennessee The value of mineral production in Tennessee in 1957 was reported at $129,972,000, compared with $137,859,000 in 1956. This represents a decrease of 6 percent below 1956, the record year.

Barite production declined 31 percent. Production of clays increased 9 percent and set a new annual record, owing mainly to increased output of miscellaneous clay. Marketable production of phosphate rock decreased 3 percent.

Sand and gravel production decreased 6 percent. Stone production increased 2 percent and set a new annual record, owing mainly to increased output of crushed limestone.

Mica production from Davy Crockett Lake was more than tripled. Shipments of masonry and portland cements decreased 15 percent owing to a general strike.

Vermont The value of Vermont mineral production in 1957 totaled $22,400,000, a decline of 3 percent from 1956. The value of this output was 9 percent higher than in 1954, the previous

Mineral Production in Kentucky 1956-57[1]
Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Clays	904,827	$4,079,185	781,000	$ 3,785,000
Fluorspar	14,865	607,704	16,217	756,000
Sand and gravel	5,684,124	5,974,292	5,558,000	5,981,000
Stone	11,552,973	15,324,278	11,745,600	15,436,000

[1] Production as measured by shipments, sales, or marketable production (including consumption by producers).
[2] Estimated from producers' reports and other sources.

Mineral Production in North Carolina, 1956-57[1]
Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Clays	2,663,448	$ 2,026,709	[3]2,434,000	[3]$ 1,445,000
Feldspar, crude...long tons..	255,637	3,191,559	261,000	3,047,000
Mica, scrap	47,125	1,064,631)	51,365	3,211,000
Sheet .....lb.....	770,903	2,135,057)		
Sand and gravel	7,580,593	6,264,135	7,219,000	6,514,000
Stone	[3]8,352,274	[3]11,471,609	12,864,000	18,920,000
Talc and pyrophyllite, crude ..	125,487	529,205	120,000	510,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2] Estimated from producers' reports and other sources.
[3] Incomplete total.

Mineral Production in South Carolina, 1956-57[1]
Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Clays	1,087,408	$5,450,685	1,087,000	$ 6,543,000
Mica, sheet	5,400	13,784	(3)	(3)
Sand and gravel	3,228,740	2,925,902	2,807,000	2,555,000
Stone	3,994,077	5,321,970	4,506,800	6,141,000
Titanium	2,592	326,283	3,450	305,200

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2] Estimated from producers' reports and other sources.
[3] Figure withheld to avoid disclosure of individual company confidential data.

Mineral Production in Tennessee, 1956-57[1]
Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Cement:				
Masonry, 376-lb. bbl.	705,141	$2,420,648	693,000	$ 2,419,000
Portland, 376-lb. bbl.	8,049,701	23,013,979	6,737,000	20,615,000
Clays	1,378,512	4,887,609	1,507,000	5,225,000
Fluorspar	449	16,220	32	1,150
Lime	124,592	1,436,200	100,000	1,283,000
Phosphate rock, long tons	1,685,003	11,643,123	1,635,000	11,525,000
Sand and gravel	5,629,341	6,480,573	5,307,000	6,479,000
Stone[3]	15,556,194	23,796,346	15,895,000	24,186,000

[1] Production as measured by shipments, sales, or marketable production (including consumption by producers).
[2] Estimated from producers' reports and other sources.
[3] Incomplete, excludes crushed sandstone.

Mineral Production in Vermont, 1956-57[1]
Excerpted from Bureau of Mines Data

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	Preliminary 1957[1] Short Tons (unless otherwise stated)	Preliminary 1957[1] Value
Sand and gravel	1,909,778	$ 905,397	1,855,000	$ 923,000
Slate	162,239	3,721,545	145,000	3,326,500
Stone	620,510	11,622,274	661,700	11,855,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

peak year. Increased costs and higher wages led to price increases and generally lower outputs for most Vermont mineral commodities. Production of asbestos, stone, and talc in 1957, however, was higher than in 1956 in both quantity and value.

The value of stone output in 1957 totaled 53 percent of the total value of Vermont mineral production. Next highest in percentage of the total state value of mineral output were asbestos, slate, and copper. Dimension granite and dimension marble were the stones of greatest market value in 1957, followed by crushed or broken limestone, marble and granite. The crushed limestone included a substantial quantity of whiting. Except for asbestos and talc, tonnage and value of other nonmentals declined in 1957.

Canadian manufacturers of portland cement shipped or used 665,430 tons of cement in May, 1958, compared with 422,752 tons in April. In 1957, the May shipments amounted to 628,961 tons. Actual production for May, 1958, was 606,598 tons, compared with 524,608 tons in May, 1957.

Production from January to May of 1958 reached 2,098,051 tons compared with 2,096,191 tons in the same period of 1957.

Riverside Cement Company To Install Outsize Crusher

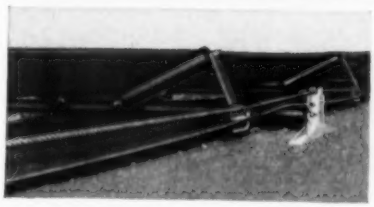
One of the largest crushers in the cement industry is now being completed for the Riverside Cement Company, Los Angeles, Calif., at Allis-Chalmers West Allis Works.

The gyratory crusher will have a 60-in. feed opening and a 89-in. diameter crushing mantle. It is designed to receive limestone pieces up to 5 ft. in diameter for reduction to a minus 8-in. product at the rate of 1,500 to 2,000 t.p.h. When assembled, the crusher will be 30 ft. high and 18 ft. 4. in. wide. It will weigh more than 750,000 lbs.

A Hydroset, or hydraulic setting mechanism with pushbutton control, will permit accurate and virtually instantaneous control of the discharge setting.

William T. Doyle, chairman of the Board of Sturtevant Mill Company, Boston, Mass., will deliver a paper on *The Dry Classification of Solids* at the September 21-24 meeting of the American Institute of Chemical Engineers in Salt Lake City. Mr. Doyle's address, accompanied by slide illustrations, will cover vibrating screens, ball and tube mills, and Sturtevant's Whirlwind Centrifugal Air Separator.

The
LONG
Lo-Rope
BELT
CONVEYOR



Offers Lower first cost—less maintenance • Easier installation • Self-training • Higher capacity—less spillage!

In this unique design, the wire rope is located below the carrying belt and carrying idlers and the motion of the belt rocks the idlers in the direction of belt travel to provide automatic self-training. This feature, combined with the belt's deep 27° troughing angle, keeps the load centered at all times, materially reduces spillage, makes possible wider spacing between idlers, and provides high carrying capacity. Adjustable height "Platform Rocker" rope support stands minimize blocking and level belt automatically.

There are other reasons why it will pay you to use the LONG Lo-Rope Conveyor. This unit requires an absolute minimum of maintenance and is designed to give long, dependable service under all conditions. We'll be glad to send complete details without obligation.

For full information on LONG Lo-Rope Belt Conveyors or a demonstration, write us today

The
LONG
Oak Hill, W. Va.
Company

Enter 99 on card, page 105

Super V-belts

on tough drive

save $1000

Especially designed to withstand heat, oil and the heaviest shock loads, Gates Super Vulco Ropes solve tough drive problems and reduce both maintenance and replacement costs.

For instance: Hackney Iron and Steel Company, Enid, Oklahoma, formerly used a flat leather belt to drive the hydraulic pump on its huge forming press. This belt—only 18 inches from the red hot steel being shaped—would stretch, slip and come off the drive.

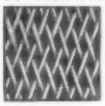
When a new press was installed, a compact, dependable Gates Super Vulco Rope was substituted. This drive—operating 8 hours a day for 5 years *without lost time for maintenance*—has saved the company more than $1000.

Claude King, maintenance superintendent, says, "Because of the way Gates Super Vulco Ropes have stood up on four of our presses, I plan to convert other drives in the plant to Super Vulco Ropes."

Drive data and design assistance are quickly available to you. Simply call your nearby Gates Distributor. Gates V-Belt stocks are carried in all major industrial centers.

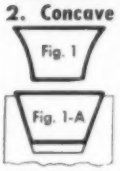
No other V-belt has ALL these advantages

1. Flex-Weave Cover (U. S. Pat. 2519590)



A Gates exclusive: provides greater flexibility...prolongs belt life...helps deliver more power to driven machine.

2. Concave Sidewalls (U. S. Pat. 1813698)



Note the concave sides shown in Fig. 1. As belt bends, concave sides become straight, making uniform contact with sheave groove (Fig. 1-A). Even contact means uniform wear...far longer belt life.

3. Tough, Resilient Tensile Cords

Super strong and resilient; provide 40% greater horsepower capacity...easily absorb heavy shock loads...reduce number of belts required, save weight and space.

4. High Electrical Conductivity

Built into Gates Super Vulco Ropes for safer drives (in explosive atmosphere).

5. Oil, Heat, Weather Resistant

Made with special rubber compounds, Super Vulco Ropes stand up longer under all conditions.

TPA 352

Gates

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THE GATES RUBBER COMPANY

Denver, Colorado

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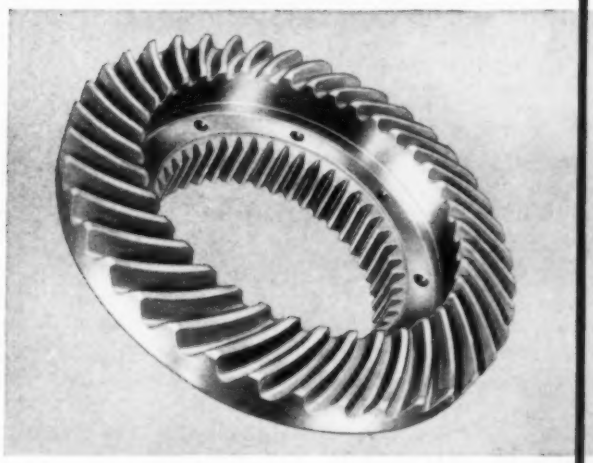
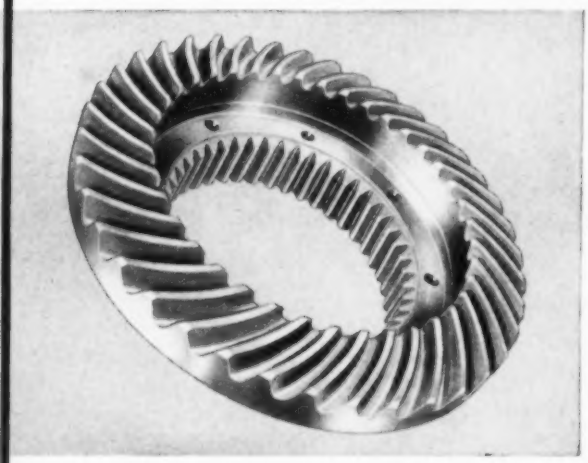
40% more Horsepower Capacity

They May Look Alike . . . but they're Not!



Replacement Ring-Gear
Made by Eaton—Axle Division



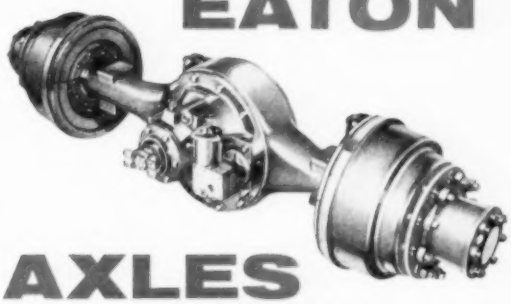
Replacement Ring-Gear
Not Made by Eaton

Only Genuine Eaton Axle Service Parts are Identical to the Original Production Components

Even Eaton Axle parts may wear out and require replacement. When this happens it is important that repairs be made with Genuine Eaton Axle Service Parts. They are identical to the original production components in design, metallurgy, heat treatment, and quality of finish—made to run together with the other axle parts. Eaton replacement parts are held to the rigid quality standards established for axle components and will deliver the same dependable, low-cost kind of service. So when, after thousands of miles of trouble-free operation, it may become necessary to replace worn parts in an Eaton Axle, it's most economical to make these replacements with Genuine Eaton Axle Service Parts.

MORE THAN TWO MILLION

EATON



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The pattern of preference for P&H among copper mine operators is especially significant. Here, industry management must constantly concern itself with selection and performance of the big shovels—the "giants" that require a large capital investment and importantly influence tonnage costs.

Reasons why P&H Electrics are a popular choice among the southwest's mines include such P&H innovations as MAGNETORQUE® and ELECTRONIC CONTROL—each of these *exclusive* P&H features contribute mightily to steady day-in and day-out high production.

Also, P&H users get single source responsibility, as P&H designs, manufactures and applies all electric rotating equipment specifically for electric shovel service.

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P&H ELECTRIC SHOVEL LINE: 3½ through 10 cu. yd. capacities

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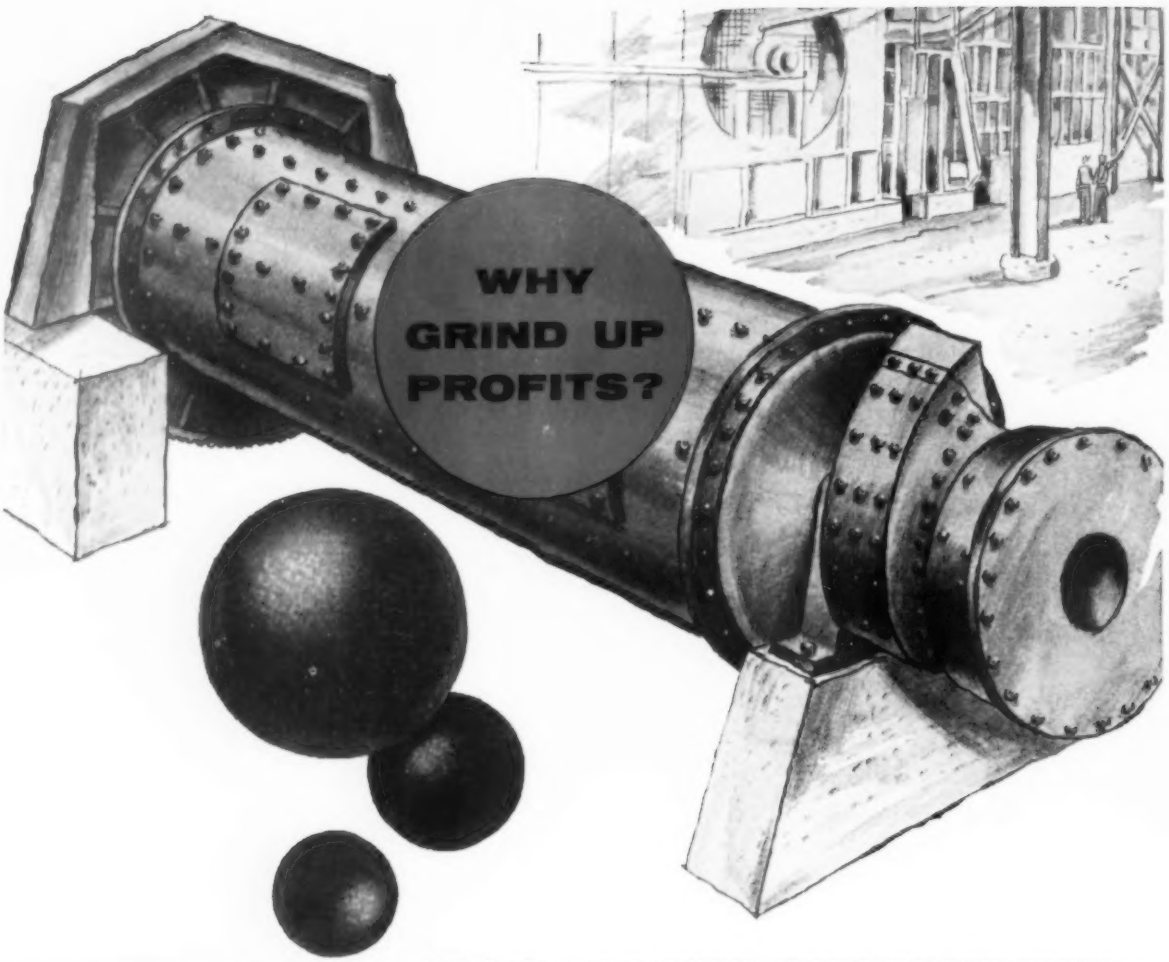

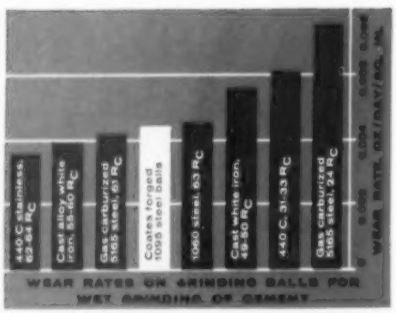
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Cast alloy white iron, 58-60 Rc
Gas carburized 5165 steel, 61 Rc
Coates forged 1095 steel balls
1060 steel, 63 Rc
Cast white iron, 48-50 Rc
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Gas carburized 5165 steel, 24 Rc
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Continuing research by Coates has produced a better grinding ball . . . low in cost, high in performance. Coates Carbex Triple-Forged Grinding Balls are rounder, hardened for performance, and toughened for stress by efficient modern methods. Specify Carbex balls, proven your best buy.

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OFF-THE-HIGHWAY TRUCKS, in 22-, 32-, and 37-ton capacities, are now being manufactured by the *LeTourneau-Westinghouse Company*. The trucks, designated the Haulpak line, are described in an illustrated booklet containing specifications and a detailed discussion of design features. **(301)**

RAY-MAN CONVEYOR BELT is discussed in a 12-page brochure issued by the *Manhattan Rubber Division, Raybestos-Manhattan, Inc.* Drawings are used in describing the compensation and other features of this type of belt. Pages are arranged to represent an actual cross-section of the belt. **(302)**

THE JOY MICRODYNE DUST COLLECTOR is detailed in a bulletin released by the *Joy Manufacturing Company*. Bulletin J-616 contains installation photos, performance curves, complete specifications, cutaway drawings of the inner construction, and a description of a related filter for reclamation or removal of the collected slurry. **(303)**

CORIAMID ADHESION TRANSMISSION BELTING is the topic of a folder offered by *Coriamid, Incorporated*. The bulletin gives complete specifications and information for proper selection and use of the belting. Detailed are Type COR belting, with outside cover of split chrome tanned leather, and Type CORCO, with Perlon woven fabric cover. **(304)**

NEW CLASSIFYING SYSTEMS announced by the *Buell Engineering Company* are detailed in a bulletin containing line drawings, graphs, installation photos, and an explanation of the general operating characteristics of the centrifugal and gravitational type classifiers. Data is also given on arrangement, power requirements, constructions, and pilot plant facilities. **(305)**

SPECIAL ANALYSIS STEEL PIPE used for hydraulic materials handling is treated in a folder from *Armco Drainage & Metal Products, Inc.* Subjects covered include abrasion resistance, structural strength, non-leaking joints, high flow capacity, and range of sizes. **(306)**

CEMENT MANUFACTURING at a new 200,000 ton cement plant in England is described in a bulletin from the *Fuller Company*. The bulletiin gives full information on sizes and types of all plant equipment; describes the operation of two 560-ton raw meal blending and storage silos equipped with the Fuller Airmerge quadrant blending system; and covers kiln operation and clinker cooling. A flow sheet and a general plan of the plant are included **(307)**

THE MECKUM-FLOATEX SAND CLASSIFYING SYSTEM in a typical installation is detailed in a brochure from *Meckum Engineering, Inc.* The system automatically and hydraulically washes, classifies, de-waters, and blends together the several grades into specification sand. **(308)**

THE GISMO SELF-LOADING TRANSPORT is described in Bulletin B-100, published by the *Sanford-Day Iron Works, Inc.* The Gismo is a mucking machine which will operate in the irregular, adverse conditions found in hard rock mining. It is also an efficient machine for removing large boulders from the muck pile for secondary blasting. **(309)**

THE HOFFCO-VEYOR, a new portable pneumatic conveying system introduced by the *U. S. Hoffman Machinery Corporation*, is covered in Bulletin PB-502. Equipped with inlet valves to take standard size 1½ to 2 in. vacuum hose, Hoffco-Veyors can be used as vacuum cleaners when not in use as portable conveyors. **(310)**

October ***PIT AND QUARRY*** **1958**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

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EXCAVATING, DRILLING, AND MATERIAL HANDLING EQUIPMENT manufactured by the *Bucyrus-Erie Company*, is included in General Catalog GC-6. Illustrated and described are general purpose shovels, cranes, and draglines, ⅜ to 4 cu. yd. capacity; quarry and mine shovels and draglines, 2½ to 8 cu. yd. capacity, blast hole drills and bit dressers; stripping shovels, 25 to 65 cu. yd. capacity; and walking draglines, 4 to 36 cu. yd. capacity. **(311)**

APEX DESIGNS AND CONTROLS FOR KREBS CYCLONES are featured in Bulletin 1400, released by *Equipment Engineers, Inc.* Proper apex discharges relating to classifications efficiency of a cyclone in both open and closed circuit applications, cut-away drawings, and an Apex Capacity Chart for present cyclone users and others with classification problems are covered in this bulletin. **(312)**

SPEEDMASTER GEAR REDUCERS are covered in *Western Gear Corporation's* Catalog No. 5802. The catalog contains complete engineering and selection information on SpeedMaster reducers, which are available in a wide range of ratios up to 10,000 hp. **(313)**

A JAW CRUSHER CATALOG published by the *Rogers Iron Works Company* describes 13 crusher sizes in the Rogers heavy-duty line and 7 sizes in the Rogers Roadbuilder series. Included are installation photos and illustrations of component parts. Dimensional drawings and capacity tables are supplied, as well as a product chart of size percentages. **(314)**

FARRELL-CHEEK STEEL COMPANY offers a 4-page folder of specifications. Detailed chemical analyses, physical properties, and comparable specifications (ASTM, Federal, AAR, Military, SAE) of all Farrell-Cheek's production cast steels are shown in tabular form. In addition, discussions of the basic steels and products are included. **(315)**

VIBRATING FEEDERS manufactured by the *Syntron Company* are illustrated in a 30-page catalog which contains descriptions, data, and specifications for the firm's complete line of feeders. The booklet also contains typical installations and a variety of application diagrams. **(316)**

WIRE ROPE TYPE BELT CONVEYORS are described in Bulletin 948, issued by *The Jeffrey Manufacturing Company*. Illustrations show types of carrying idlers, types of ropestands with return idlers, and installation views. **(317)**

INSTRUMENTATION AND EQUIPMENT FOR AUTOMATION in the process industries are described in a bulletin published by *B-I-F Industries, Inc.* The bulletin contains photographs, operational data, and design feature descriptions of 12 varied products for positive control of materials in motion. **(318)**

ROTARY GATES FOR DUST COLLECTION, pneumatic conveying, and feeding applications are discussed in a technical bulletin issued by the *Ducon Company, Inc.* The bulletin describes and illustrates the four styles of Type G gates available. Design features and selection factors are discussed. Complete dimensional and capacity information is included. **(319)**

TRACK SHOES and hardware are discussed in an 8-page booklet prepared by the *Caterpillar Tractor Company*. The illustrated booklet provides information on the selection and rebuilding of track components. Torque specifications are listed for the correct tightening of hardware. **(320)**

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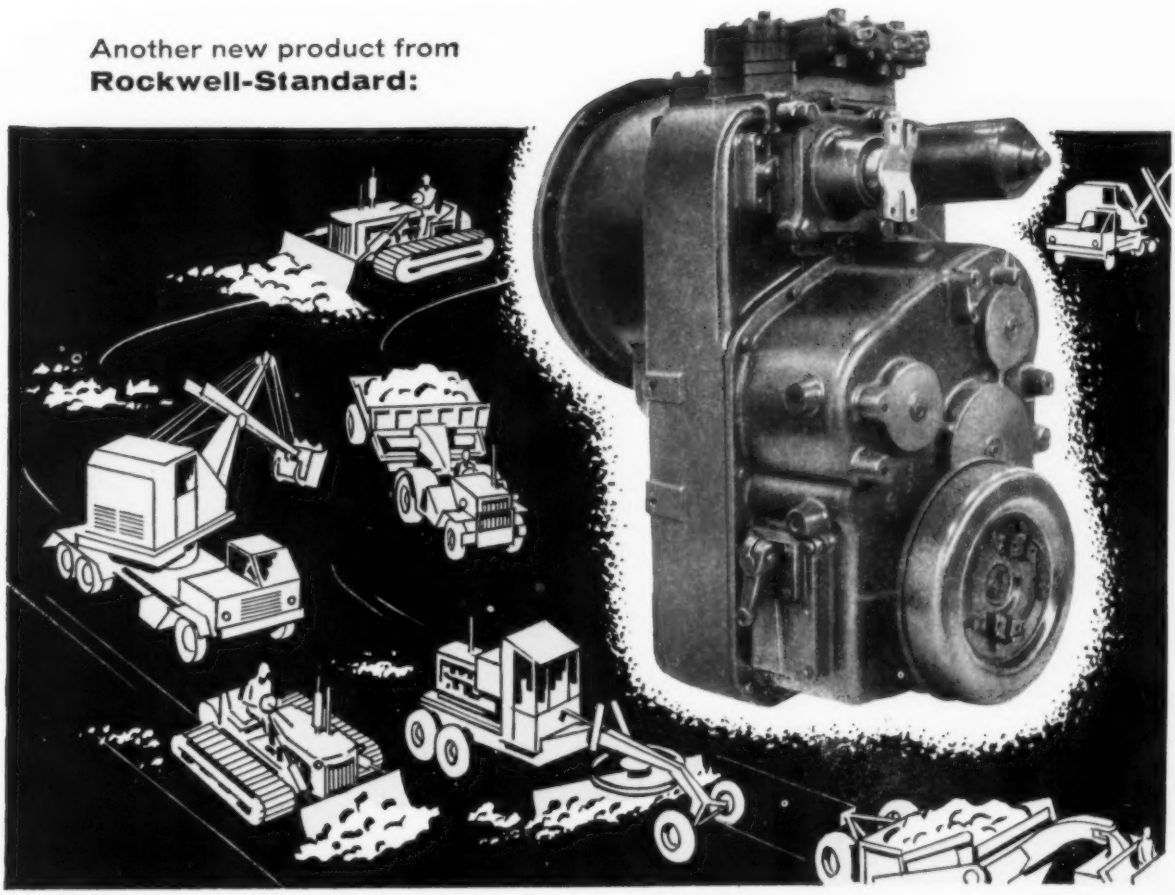

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Hydra-Drives Power Shift Transmissions put *more* power to work . . . smoothly . . . efficiently . . . economically. Proved in hundreds of vehicles for three years, these units assure top work output of heavy-duty equipment. Engine lugging and heavy shock loads are eliminated. A 3 to 1 torque multiplication makes starting fast and effortless—even with heaviest loads.

Simple to operate, too, a flip of the operator's lever accomplishes power shifts within each range and without any interruption of the power flow. Automatic features of the converter and ease of power shifting simplifies operator training and lengthens vehicle life.

With four speeds forward and reverse, the Hydra-Drives Power Shift Transmission is ideally suited for vehicles which must travel in both directions during a normal work cycle. Rated at 550 ft. lbs. input torque, they can be used with a wide range of internal combustion engines up to 250 H. P.

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OUR CLUPAK* MULTIWALL

Pound for pound, our new multiwalls—made of Kraftsman Clupak paper—can take abuse that breaks ordinary bags. Clupak multiwalls are lighter—but much tougher. Even with fewer plies than ordinary multiwalls, these new bags still perform better—and *more economically!*

Kraftsman Clupak paper gives these new bags their extra toughness. This paper has a patented, built-in "stretch" that stands up against rough handling in transport, storage and use.

Best of all, even with these important advantages, our new Clupak multiwalls *cost no more* than old fashioned, regular bags.

West Virginia's Clupak multiwalls are available now in these types: Pasted Open Mouth, Pasted Valve, Sewn Valve, Sewn Open Mouth and Stepped End.

All of them are lighter and tougher. Try them . . . on your next carload order, let us include a trial shipment of 5,000 of our Clupak multiwalls. Call or write:

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MULTIWALL BAG DIVISION

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LOAD FAST! PR21 offers a big target. Short non-stop turns of DW21-PR21 unit speed spotting under shovel and work in narrow cuts. PR21's special steel withstands impact, abrasion and corrosion — has the stamina to keep production up.

ROLL FAST! DW21 Super-Turbo Engine develops 28% torque rise and 320 HP (maximum output); tractor has top speed of 27.9 MPH. The PR21 has 22.5 cu. yd. heaped and 62,000 lb. capacity. All add up to fast cycles, top production.

DUMP FAST! PR21 has hydraulic hoists for quick and complete 60° dumping of any material. DW21's hydraulic steering facilitates maneuvering. Wide-section, tubeless tires provide maximum flotation and sure-footed traction.

CAT DW21-PR21 UNITS AVERAGE 5 TRIPS AN HOUR ON 1-MILE ROUND-TRIP HAULS

This is one of the DW21 (Series C) Tractors with Athey PR21 Rear Dump Wagons used by the Yahola Sand & Gravel Co., Fort Gibson, Oklahoma. The units haul gravel from the Grand River to the plant. Each handles an average load of 22 cu. yd. and makes the 1-mile round trip in 12 minutes cycle time. With short turning radius, high cruising speed and fast dumping action, they keep production on schedule day after day during a 6-day week.

Now a new DW21 (Series D) is matched to the 22.5-cu.-yd. PR21 for fast, heavy-duty work. The new DW21 features the Caterpillar Super-Turbo Engine that delivers 320 HP (maximum output) . . . and a 28% torque rise—twice as much as ever before, to handle the roughest terrain.

The Super-Turbo incorporates an important advance in tractor diesel engine turbocharging—a new air induction system. This system allows use of more of the Turbocharger's potential than was possible before. Results: a big torque rise, higher horsepower, better acceleration and gradeability. But more important, faster cycles, greater production and more profit—*for you*.

Let your Caterpillar Dealer show you how the new DW21-PR21 can step up production and lower costs. He has facts to prove it's a good investment —an investment that he backs with round-the-clock service. Ask him to demonstrate on your job. Just say when and where—he'll be there!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS

Expanded Clay-Shale Assn. Members Study Theory, Field Practices

A FIELD demonstration of design mixes for structural lightweight concrete, reports on advancement of a broad-phased research program, and evaluation of a commercial plant installation for the reduction of sintered clinker highlighted the mid-year meeting of the Expanded Clay and Shale Association in Denver, Colo., on July 21 and 22.

R. A. Utiger, president of E.C.S.A., and his firm, Cinder Concrete Products Company of Denver, acted as host to the group. Sessions were held in the Cosmopolitan Hotel's Empire Room.

In his talk, Ralph C. Johnson, sales manager of Simplicity Engineering Company, stated that a Model 40 D-Centegrator installed in the "Beslite" plant of Light Weight Aggregate Corp. at Livonia, Mich., has proven very promising in the reduction of sintered clinker. A redesigned impeller has considerably reduced crusher maintenance. Better uniformity of end product, improved gradation, and a greater output of fines were noted because it is now possible to feed larger material than with the preceding roll crusher. Working about 15 to 20 minutes out of each hour, the machine is producing 150 t.p.h. at Livonia. Maintenance problems have been at the minimum. Abrasive wear has led to slight changes in the design of the machine, aimed at giving blades longer service. 16 mm. films accompanied Mr. Johnson's talk.

Lucas E. Pfeiffenberger, technical director of E.C.S.A., gave a comprehensive report on the association-sponsored program of research and testing. He emphasized the long-range character of the program, which aims at establishing a comprehensive set of data on the performance of lightweight aggregates and other materials.

The Marketing Challenges of Lightweight Aggregates were covered in a paper presented by T. R. Berger, executive secretary of E.C.S.A. Mr. Berger pointed out that the techniques and opportunities for effective sales promotion of expanded clay and shale lightweight aggregates are broad and diverse. He underscored the importance of trade name identification, the distribution of technical data and test results, and the use of printed media and other advertising forms to point up to architects, engineers, and contractors the advantages of lightweight aggregate. "While these are people who want hard, statistical facts on why lightweight aggregates do an effective job, they are very receptive to imaginative literature, well-illustrated advertisements and unusual presentations," Mr. Berger reminded his hearers.

The annual dinner meeting of the association in the Club Room of the Cosmopolitan was attended by nearly 50 members, guests, and ladies. In his address, Andrew R. Pfeiffenberger, assistant to the president, Bowman Biscuit Company, Denver, described *Colorado, the Favored Land*, and showed a color film covering the four seasons of the year.

The second day was given over to a field demonstration of mix designs for structural lightweight aggregate concrete. Victor McIntyre, district engineer of Master Builders Company, presented the demonstration. A tour of Cinder Concrete Products plant closed the sessions.

The group's annual meeting will be held in Cleveland along with N.C.M.A. sessions in January.

T. R. Berger, executive secretary

R. A. Utiger, president of E.C.S.A.

← Enter 110 on card, page 105

Disciplining Dust—

engineering factors to consider an industrial dust control

By W. O. VEDDER
Manager, Dust Control Dept.
Pangborn Corporation
Hagerstown, Md.

A PROPERLY planned and installed dust control system is becoming a vital part of almost every nonmetallic minerals processing plant. There are three major reasons for the widespread interest in dust control today: (1) it is a method of improving plant working conditions; (2) it eliminates public nuisances caused by dusts exhausted to the atmosphere; and (3) it provides a means of reclaiming usable materials.

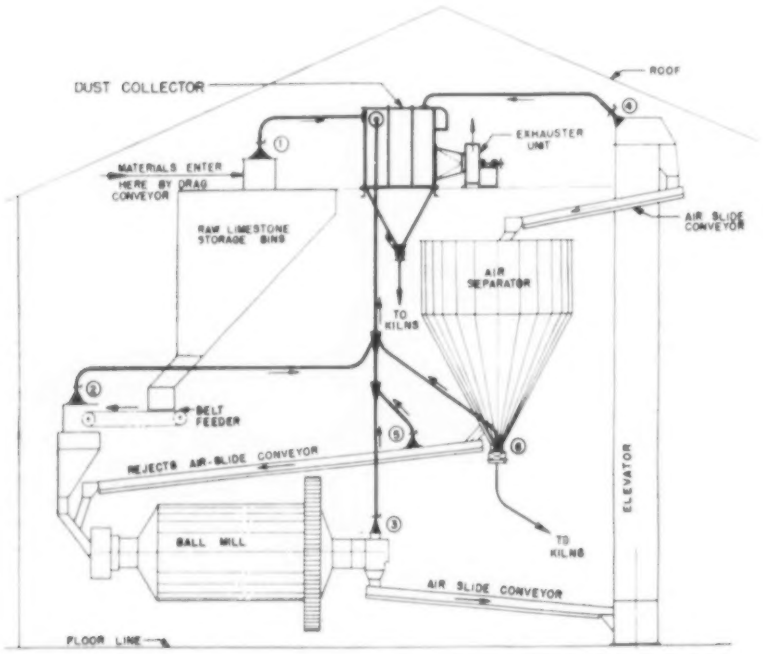
All three of these are pressing management problems today. Good working conditions mean higher production and lower employee turnover; many localities prohibit dust from being exhausted to the surrounding atmosphere; and reclamation helps reduce shortages and salvages valuable materials.

Coupled with the three major reasons for current interest in dust control are four secondary motives: proper dust control permits recirculation of cleaned air, prevents exhausted dust from re-entering work areas, improves plant housekeeping and decreases building maintenance, and cuts wear and maintenance on operating equipment.

The most widely used means of achieving these benefits of dust control are exhaust systems. No definite rules or specifications can be outlined for system planning which will apply to all conditions, since many variables influence design details in each specific case. However, the following discussion of exhaust methods and equipment presents the major factors to be considered when planning a dust control system.

Dust control systems comprise (1) the exhaust hoods and piping system, (2) dust collecting equipment, and (3) the exhauster and its drive. A typical industrial exhaust system is pictured on this page. Each component must be considered separately in relation to the type and amount of dust to be handled.

Raw mill diagram of a typical nonmetallic mineral dust control system.



in planning system

When complete or semi-enclosure of the process is impossible, the exhaust hood should be located as close as possible to the point of dust source, as on this belt conveyor.

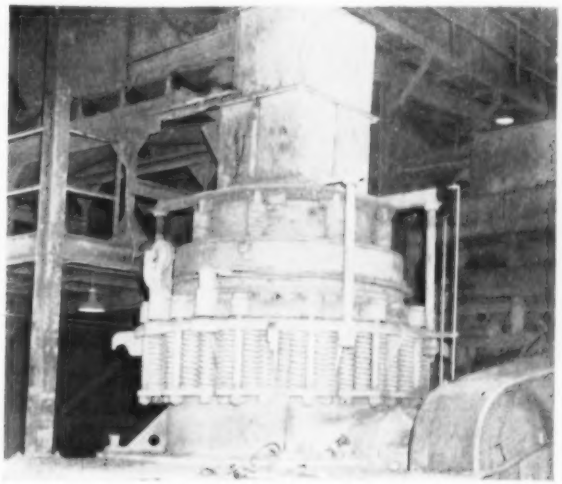
Exhaust Hoods Exhaust hoods govern the effectiveness of dust control, to a large extent. Therefore, crushing, grinding, conveying, screening, and mixing operations and processes should be as completely enclosed as possible. Next to complete metal enclosure, canvas or rubber drop curtains are recommended. When complete or semi-enclosure of the process is impossible, the exhaust hood should be located as close to the point of dust production as possible. (See accompanying illustrations.) Hood designs vary to fit the different types of processes. Hoods, along with flanges, baffles, skirts, vanes, etc., should direct maximum flow from the dust producing area and minimum flow from surrounding areas where no dust is generated.

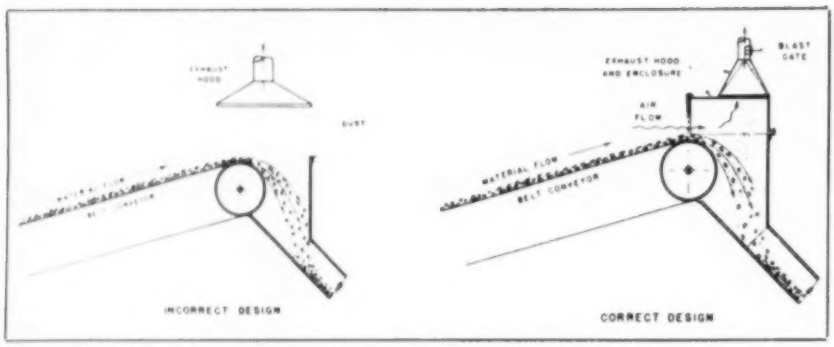
Manufacturers of equipment which tends to produce dust while in operation are designing enclosures and hoods as an integral part of their original equipment. This trend assures a standard hood for each model of equipment and provides a more effective hood design than can be developed and applied in the field by the purchaser.

Piping The diameter of piping used to connect exhaust hoods to dust collecting equipment depends upon the volume of air to be removed and the velocity at which it should be withdrawn (Table 1). In many localities codes specify connection sizes and air volumes for various operations (Table 2), and in other instances pipe sizes are determined by calculation and by experience. In calculating for the cross-sectional area of any pipe, the air volume (c.f.m.) to be removed (as determined by codes, experience, or experiment) is divided by

This is a completely dustless screen installation. The screen and its feed and discharge, fully enclosed, are vented to the collector.

Dust enclosure of a cone crusher which is connected to a dust collector.





Comparison of correct and incorrect hood design.

the velocity recommended to remove rock product dusts—generally 3,500 to 4,500 f.p.m. C.f.m. capacities of branch lines are totaled to give c.f.m. in main lines.

The following are eight suggested general specifications for average duty industrial exhaust system piping:

1. Keep bottom of pipe straight throughout its entire length to avoid dirt-collecting pockets. Make changes in area with gradual taper top and sides only.

2. Make branch connections only into side or top of tapered section of main pipe. Angle should not exceed 45 deg., and preferably should be 30 deg. Branch connections should enter near large end of tapered section, not ahead of or behind it.

3. Lap joints in direction of air flow. Keep piping free of obstructions.

4. Piping should be substantially supported throughout its length by strap iron, angle, or rod hangers.

5. Provide cleanout openings in lower side of pipe at regular intervals and adjacent to bends, junctions, vertical risers, etc. Provide end cleanouts with removable caps.

6. Elbows and bends should be formed with smooth curves having a center line radius equal to twice the pipe diameter and should be constructed two gauges heavier than straight pipes of corresponding diameter.

7. Blast gates for system resistance adjustment should be located in branches close to their junction with main pipe and provided with means for locking in adjustment.

8. Construct piping of galvanized steel with riveted and soldered or lock seam joints, or of black steel with welded joints, or of the following gauges:

4- to 12-in. diameter—No. 20 gauge.

12- to 32-in. diameter—No. 18 gauge.

32-in. diameter and over—No. 16 gauge.

Dust collection at a bag packer station in a pulverized granite plant.

Table 1—Velocities Recommended for Conveying Various Dusts

Material	Branch Pipe Velocity (f.p.m.) 3000 to 3500	3500 to 4000	4000 to 4500
Cement and lime		X	
Chrome ore			X
Clay		X	
Flint and feldspar		X	
Limestone		X	
Mica	X		
Iron ore			X
Silica and quartz		X	
Slate		X	
Talc and soapstone	X		

The Dust Collector Several types of dust collectors are in general use in the nonmetallic minerals processing field.

Settling chamber—The simplest and most economical means of removing dust from the conveying air is accomplished through a reduction in velocity, causing the dust to drop out of the air stream. This method is effective only in removing relatively coarse particles, and its application is therefore limited. Some improvement in settling efficiency can often be accomplished by installing baffle and deflector plates. The primary use of the settling chamber is as a presettling means to reduce the dust loading ahead of more effective dust collecting equipment.

Wet collector—In wet collectors the dust particles are entrapped in a liquid, usually water, and conveyed by the liquid to a settling tank or disposal area. The basic kinds of wet collectors are water curtain; dynamic precipitator; impingement; and combinations of these types. Wet type collectors are well adapted to higher temperature problems or those involving high moisture content.

Centrifugal collector—Centrifugal collectors utilize radial acceleration of an air or gas stream to separate solid particles suspended and

Table 2—Minimum Air Flow For Dust Control In Stone Crushing

Operation	Air Volume (c.f.m.)
Crushing, grinding mills	200 c.f.m. sq. ft. of enclosure open area
Screens	
Flat deck	50 c.f.m. ft.² of screen area
Cylindrical	600 c.f.m. ft.² of screen area
Mixers	150 c.f.m. ft.² of enclosure open area
Loading hoppers	100 c.f.m. ft.² of enclosure open area
Bagging machines	
Paper bags	100 c.f.m. ft.² of enclosure open area
Cloth bags	200 c.f.m. ft.² of enclosure open area

conveyed therein. The common large-diameter cyclone is widely used, but it is effective principally on coarser particles. An outstanding example is the woodworking shop savings exhaust system. Of more recent design are the small-diameter high-speed and multiple cyclone collectors which accomplish a higher degree of separation through development of higher centrifugal forces, but with resultant increase in resistance.

Cloth Filter— This type of collector filters dust from the conveying air by flowing the air through specially designed fi'ter fabric. Many variations in design are available. The cloth type filter is in general use for problems involving the collection of finely divided dry dusts.

A cloth filter consists of an air- and weather-tight casing enclosing the filter fabric, so arranged that all incoming air must pass through the fabric to the collector outlet. When the dust enters the collector, a reduction in velocity occurs, serving to drop the coarser particles of material from the air stream. The remaining dust is conveyed to the cloth surfaces, where it is filtered from the air stream; the cleaned air continues to the collector outlet. The dust pack or mat thus formed on the cloth surfaces materially assists in improving the overall recovery efficiency.

Cloth filters are available in two general designs—tube or bag type and the screen type.

In the cloth tube or bag, the filter fabric takes the form of a series of tubes or bags, open at one end and closed at the other, vertically suspended in the casing with the bottom or open end tightly sealed to thimbles in a plate. The dust-laden air enters the casing below the seal or thimble plate and passes upward.

The dust is precipitated on the inner surface of the tubes or bags. They are attached to a shaking device, usually connected at the top, which is periodically operated to remove the dust pack from the inner surfaces of the fabric. The dust drops to hoppers forming a part of the co'lector casing.

The cloth-screen collector is a refinement of the tube or bag type. The filter fabric is applied over a series of rectangular frames which effectively support the cloth. The fabric covers both sides and three edges of the frame; the fourth edge is left open, in effect forming a flue for clean air outlets. The open ends of the screens are sealed to each other or to the collector casing to divide it into a dirty (dust) side and a clean (clean air) side. The screen frames are connected to a shaking or rapping device which dislodges the dust pack from the cloth surfaces. Hoppers below the screens receive the collected dust.

Exhauster and Drive The exhauster (or fan) maintains air flow through the exhaust system. The exhauster size is determined by the total air volume to be hand'ed and by the total resistance of the system. The air volume is the sum of the volumes exhausted from the hoods, usually plus a 10 percent allowance for system leakages. The total resistance of the system is the sum of hood entrance loss plus maximum velocity head plus frictional resistance of most resistant branch (including bends and entrance into the main) plus frictional resistance of the main exhaust pipe plus collector resistance (including entrance and discharge losses) plus frictional resistance of exhauster in'et and discharge piping.

Exhausters of the steel plate planing mill type are most commonly used for exhaust systems, particularly for handling dust through the fan. Two general wheel designs are available—the radial blade (paddle wheel) and the slow speed or forward curved blade.

In suction-type installations, particularly in cloth filters with the exhauster handling celaned air, fans of higher efficiency (similar to those for ventilating work) are use. The more common design is the backward curved blade, or high-speed type. Although these exhausters are similar in design to those used in ventilating and air conditioning work, they are usually of heavier construction throughout for exhaust system application because of the higher pressures required.

Exhausters are driven by motors, either direct-connected or through flat belt, chain, or multiple V-belt drive. The multiple V-belt drive predominates because of its low initial cost, minimum slip with short centers, and flexibility for speed change.

Direct-driven exhausters are not advocated for industrial exhaust system applications since it is generally difficult to select a fan for a specific requirement with an operating speed which coincides with standard motor speeds. Therefore, direct-driven exhausters frequently require special wheel proportions to produce required performance, often at some sacrifice in efficiency. Moreover, any change in system operating requirement (air volume or pressure) necessitating a change in fan speed, which is readily obtained with be't drive, necessitates a new special wheel or conversion of the fan to belt drive.

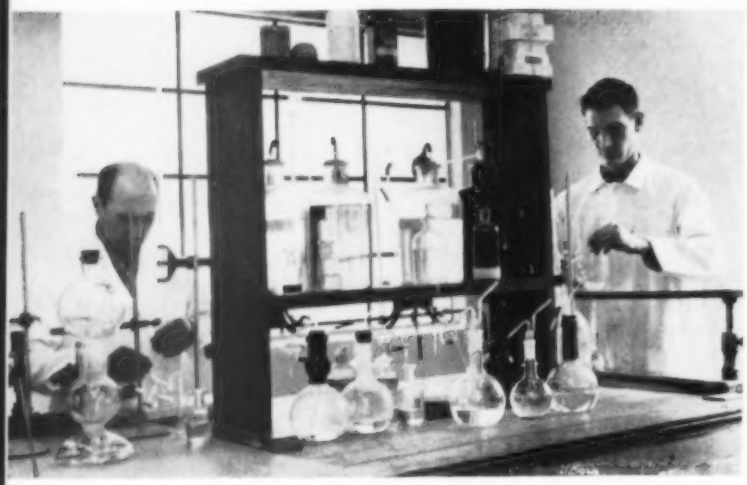
The above discussion of the elements of industrial dust control systems provides a basis from which to pursue the details of system design. Consultation with manufacturers of dust control equipment is recommended, however. These firms are qualified by experience to help plan overall systems and to advise on the specific problems of each case.

Correctly designed systems pay their own way, both in tangible and intangible savings. Collected waste, better workmanship, unsoiled finished products, greater visibility within the plant, less frequent painting, and longer life of operating equipment are all specific savings which can be credited to dust control equipment. In plants where dust is hazardous, these potential savings are obvious. It is in the plants where dust is considered merely a nuisance that management often fails to realize the price it pays for tolerating that nuisance.

Mexico Refractories Co. To Build $2,000,000 Plant

Mexico Refractories Company, Mexico, Mo., has authorized construction of a new $2,000,000 refractories plant near Stockton, Calif. Modernization of the firm's Mexico, Mo., plant is expected to be completed by the end of 1958.

With deposits of high-grade refractory clays and sands sufficient for many years, the Stockton plant will be the sixth manufacturing plant in the Mexico Refractories Company system.



Regular analyses of the material taken from various steps in the flow between mine and rail loading are handled in the control laboratory.

No Waste in

by-products include silica sand and ground mica

ANOTHER ON THE SPOT REPORT

ONE of the most interesting feldspar operations in this country is that of the Appalachian Minerals Company, a division of The Feldspar Corporation, near Monticello, in Jasper County, Ga. This plant is unique in that it is the only flotation plant in the world producing a high-potash feldspar. It also pioneered the production of feldspar in Georgia and is still the only producer in that state.

The deposit is of such purity that no hand picking is necessary to make the desired product. However, as in many other industrial minerals operations, the methods used underwent considerable evolution before the proper flow sheet was established. Also as with many similar operations, the deposit has an interesting history.

The recently enlarged plant has a capacity in 24 hr. of 150 tons of feldspar concentrates in G20 (minus 20-mesh) form for glass manufacture; 100 tons of G40 (minus 40-mesh) for fine glass, television tubes, etc.; or 70 tons of G200 (minus 200 mesh) for ceramics, electrical porcelain, sanitary ware, tile, etc. All of these products are low in free silica and iron and high in total alkali. The finished products must meet this analysis:

SiO_2	65.0 percent	65.7 percent
Al_2O_3	19.0 "	19.5 "
Fe_2O_3	.04 "	.06 "
CaO	.90 "	1.20 "
K_2O	10.0 "	10.50 "
Na_2O	3.0 "	3.60 "

By-products are about 50 tons of silica sand and 5 tons of minus 16-mesh ground muscovite mica daily.

History The deposits supplying the operation were discovered by B. C. Burgess, long prominent in the production of feldspar and related minerals in the Southeast, while he was doing geological work in this area for the government. Later (in 1947) he formed the Appalachian Minerals Co. and built a small dry-processing plant. In 1949 he took in as a partner L. P. Warner, also a geologist, and the feldspar plant was enlarged. In 1951 a mica-processing plant was added. This was hardly in operation when the main spar plant was destroyed by fire.

The plant of the Appalachian Minerals Company near Monticello, Ga. The conveyor (left) feeds crushed ore for processing.

Georgia Feldspar Plant

By WALTER E. TRAUFFER

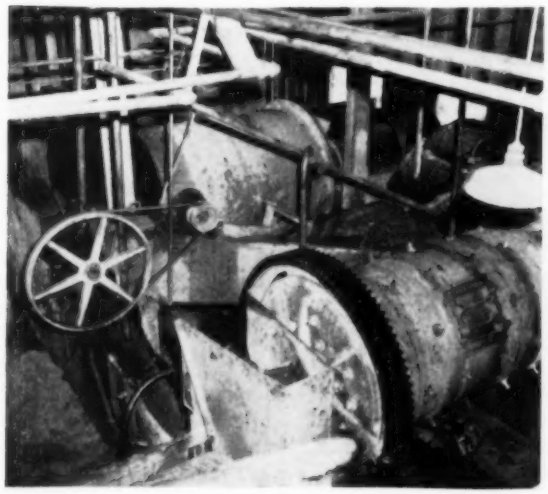
These operations remained idle until April, 1954, when the Feldspar Corp. took over. The mica plant was dismantled, as the corporation was not in that business. Much of the equipment from the old spar plant was used in the construction of a new plant. In 1955 washing equipment was added to take care of clay found in some of the ore deposits. In 1957 facilities were added to recover muscovite mica from the floats. Then early in 1958, a second conical mill and other equipment was added to serve the expanding market. Additional storage facilities are now under construction.

Deposit The deposit has a main strike 1½ miles wide and 14 miles long, with several hundred pegmatite dikes and many small stringers. These dikes dip about 60 degrees westerly and vary from 75 ft. wide and 600 ft. long to 4 by 10 ft. These dikes, which come to or near the surface, are followed down by open-pit mining. There is considerable variation in chemical analysis; so blending is always dnoe from two or more dikes. The potash content ranges from 6 to 13 percent in various dikes, and a 10.25 percent content is maintained in the finished product. Most of the dikes are graphitic granite, which is highly stratified and can be ripped out. Others higher in soda must be drilled and blasted.

Mining After the overburden has been removed, a tractor with a rock plow attached to the bulldozer blade breaks up the deposit. Stockpiles, some containing several thousand tons, are built up at each active pit, to be drawn from as needed. At each pit there is an Allis-Chalmers HD5 diesel tractor with a 1¼-cu. yd. front-end loader; and each driver can load his own truck. Some of these pits are near the plant; others are as far as 13 miles away. Hauling is done by contract with five Chevrolet dump trucks carrying 8- to 9-ton loads.

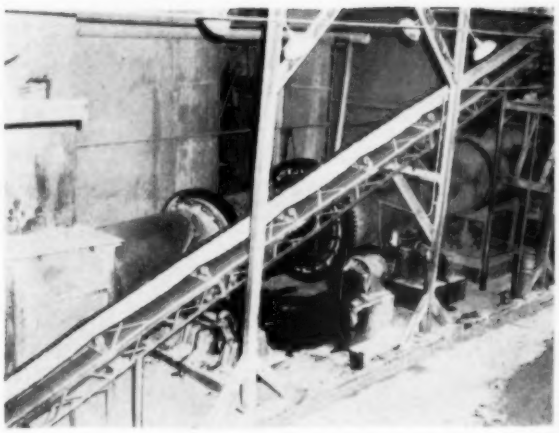
Washing Clean ore hauled to the plant goes direct to the primary crusher. That containing some clay goes first to the washing building. There it is dumped on an apron feeder, which discharges it to a 5- by 30-ft. revolving screen equipped with 12-mesh cloth and

The two rod mills which further reduce the ore before the screens remove oversize, which is largely mica.



A tractor-loader at one of the pits, loading a truck for the haul to the plant.

Left: Some of the flotation cells which remove mica, iron-bearing minerals, and silica sand from the feldspar.



Right: The 5- by 30-ft. direct-heat rotary drier which dries the spar before it goes to the magnetic separator.

sprays. The fines and water go to a waste pond. The washed ore off the screen goes to a 75-ft. long radial stocking conveyor on wheels. This conveyor can be swung manually in a 190-degree arc and can stockpile 15,000 tons without rehandling. A rough blend is maintained in this pile in case the mines are not operable due to bad weather or other reasons. Front-end loaders and trucks are used to feed this material to the crushing department.

Crushing and Grinding The trucks discharge the ore to an apron feeder ahead of the 15- by 24-in. Diamond primary jaw crusher. The minus 1¼-in. crushed ore is conveyed to a 500-ton steel storage silo. A variable-speed conveyor feeds this material at the desired rate to a 20-in. by 18-ft. Eagle Iron Works single-screw washer, which further de-slimes the ore. This material is then split to a pair of 8-ft. long Denver rod mills—one 4 ft. and the other 5 ft. in diameter. Both mills are loaded with 2½-in. dia. rods and have 14-mesh screens attached to their discharge ends. The small amount of oversize from these screens is largely mica, which is further processed.

The minus 14-mesh throughs are fed by a 3-in. Allen-Sherman-Hoff rubber-lined pump to a 6-ft. dia. hydroclassifier. Then a 6- by 21-ft. Dorr rake classifier further dewaters the material.

Flotation The material then flows to a pair of mica conditioners, where General Mills amine acetate, sulphuric acid (60 deg.), pine oil, and fuel oil are added as reagents for mica flotation. In the four Denver flotation cells these reagents attach themselves to mica particles, causing them to be non-wetting; these particles attach themselves to air bubbles and rise to the surface as froth. This material overflows the cells and is fed by a 2-in. Denver vertical pump to a mica storage silo.

Sand out of the bottom of the cells goes to a second 6- by 18-ft. Dorr rake classifier for washing before it is discharged into another pair of conditioners. There it is conditioned at high solids with an American Cyanamid sulphonated oil, sulphuric acid, and pine oil. In the four flotation cells these reagents attach themselves to the heavy or high-iron bearing minerals—ilmenite, garnet, etc.—and the froth goes to waste.

Feldspar and quartz undersize from these cells goes to a 5- by 18-ft. Dorr classifier for washing before it is fed to a third pair of conditioners. The reagents added there are amine, 70 percent hydrofluoric acid, pine oil, and fuel oil. These conditioners feed four cells which float off feldspar.

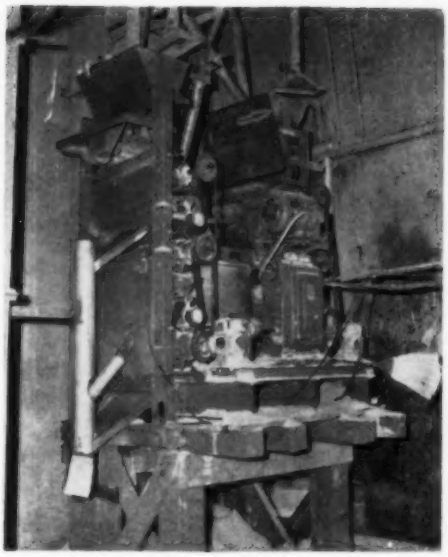
Quartz out of the bottom of these cells is discharged by a 2-in. Denver pump into a pair of 100-ton bins. This sand is loaded out with a front-end loader and is sold for construction, beaches, golf course sand traps, etc.

Feldspar froth from this last set of cells is discharged by a 2-in. Denver vertical pump into a Denver de-oiling conditioner, where it is neutralized by sodium hydroxide. It then flows to a 2- by 18-ft. Dorr rake classifier for washing and dewatering before it goes to eight 100-ton bins, which also have rock filter beds for drainage. The material in these bins is analyzed so that it can be blended out of two or more of them.

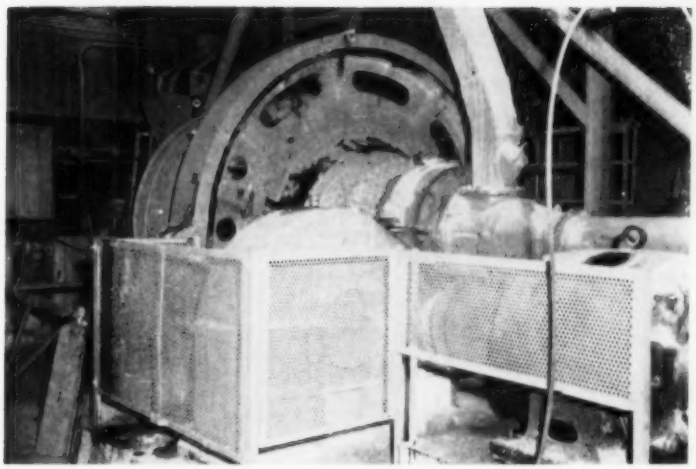
Drying After the feldspar in the bins has drained to 10 to 12 percent moisture content, it is fed by a front-end loader to a 20-ton hopper. A belt conveyor feeds the spar to a 5- by 30-ft. direct-heat rotary drier which is fired with No. 2 fuel oil by a Todd burner. The dried spar is elevated and passes over an Exolon magnetic separator to ensure complete removal of iron-bearing minerals before it goes into two (No. 2 and 3) of five 200-ton concrete silos. At this point 20-mesh spar can be loaded into covered hopper or box cars for shipment.

Material to be further treated goes *via* the same elevator and separator from the drier to a 3- by 5-ft Tyler Hum-mer single-deck screen with 40-mesh wire cloth. The minus 40-mesh undersize goes to a third silo (No. 1) in the group of five. The 20- to 40- mesh oversize can either go back to the pair of 20-mesh silos or on to the grinding flow.

Grinding This 20- to 40-mesh material goes to a 40-ton mill feed bin which can, if desired, also receive material from the 20-mesh bin. The latter supplies two Hardinge conical mills—one 8 ft. by 60 in. and the other 7 ft. by 48 in. Both are standard mills and they are in circuit, respectively,



Left: This magnetic separator ensures removal of iron-bearing minerals from the finished product.



Above: One of the two conical ball mills which can regrind coarser products to finer sizes.

with a No. 54 Superfine classifier and a No. 36 loop classifier. Both are loaded with imported Belgian flint pebbles and have foreign and domestic quartz liners. Both mills are air swept and their 99½ percent through 200-mesh product goes to silos No. 4 and 5.

Each of the five silos has side discharge gates for direct loading to cars. Under the silos are two St. Regis 1-spout packers, one for 20- and 40-mesh and the other for 200-mesh, which pack into 100-lb. multi-wall paper bags.

Control By starting at the mines, accurate control of blending is possible. In the various steps of the processing, of course, considerable interblending is achieved. Then at the 8 drain bins the floated product is analyzed in the company's laboratory and blended out to specification. Finally, the finished product is again analyzed.

Further blending can be accomplished if necessary by transferring material from one silo to another. On rare occasions when the analysis is too far off, material can be returned *via* belt conveyers to the drain bins for reblending. If it should ever be necessary, the material from any of these silos can be returned to the separator following the drier. Finally, each carload of finished product is analyzed before it is shipped.

Mica The oversize (mica) from the rod mill screens is pumped to two pairs of Humphreys spiral concentrators. A 2-in. Denver vertical pump discharges their product to four 10- by 40-ft. ground storage bins. These have concrete walls and floors with recesses covered by 14-mesh screen for drainage.

The mica from the first set of flotation cells is fed to a conditioner and then to a pair of cleaner cells. The sand out of the bottom is wasted. The mica float is pumped to a small rotary screen for washing and then to the above-mentioned draining bins. Total mica production averages about 5 tons daily. It is sold to a mica producer, who in turn dries and bags it for sale for use in oil well drill mud.

Other This plant requires about 800 g.p.m. of clean water, which is supplied from a 35-acre, 22,000,000-gal. artificial lake fed by a small stream. Two 3-in. Gardner-Denver centrifugal pumps supply water to the plant through a 6,000-ft. line of 8-in. Naylor spiral-welded pipe. The feed tank has a 10,000-gal. capacity. Waste water is not reused but it passes through settling tanks before release.

At Monticello, Thurman Willis is plant manager, and Fred Harrison is plant superintendent. C. P. Rogers Jr. is vice-president, and L. L. McMurray, who designed the plant, is the company's chief engineer.

N.L.A. Sets Up Fellowship To Study Lime Effect on Soils

A three-year research fellowship involving a fundamental study of the reaction of hydrated lime with selected pure clays and clay-type soils, has been established by the National Lime Association, Washington, D. C., at the University of Illinois.

James L. Eades, research soils engineer on leave from the Virginia Department of Highways, will be the recipient of the fellowship. He will work under the direction of Dr. Ralph E. Grimm, professor, department of geology, University of Illinois.

The key objective is to determine the mechanism which causes lime to alter soil properties. Soils engineers concerned with base, subbase, and sub-grade stabilization need a quick, simple test to determine the effectiveness of lime with various soils.

Rhodesian Cement Concerns To Expand Facilities

Rhodesia Cement, Ltd., now producing 280,000 tons of cement annually from four kilns, expects to bring another kiln into production at Colleen Bawn, southeast of Bulawayo in the near future.

Nyasaland Portland Cement Company, Ltd., a subsidiary of Rhodesia Cement, plans to build a 90,000-ton capacity plant in Blantyre.

Lime Reclaiming Plant

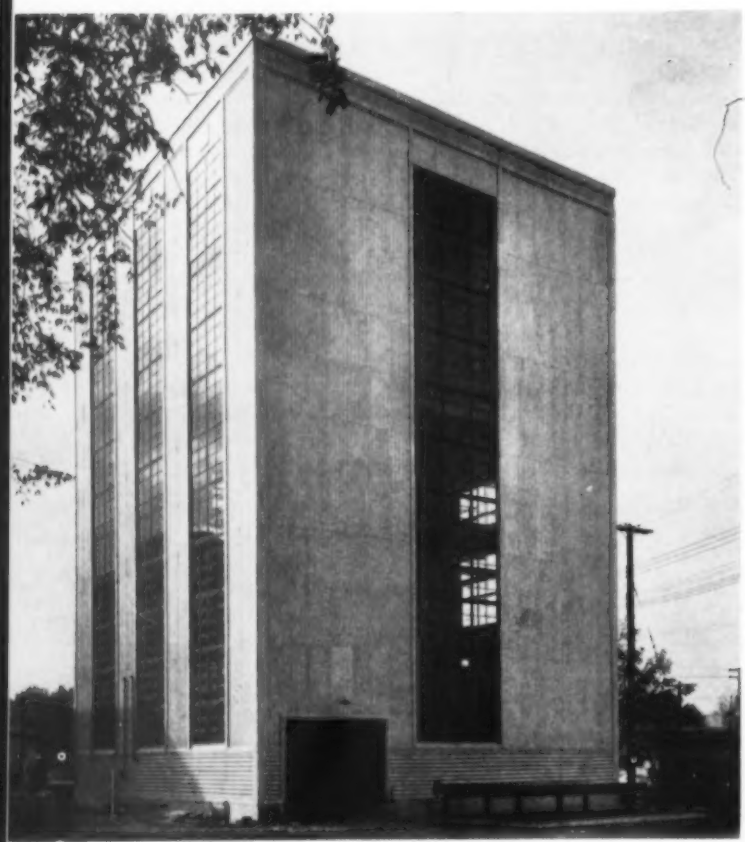
By BUREN C. HEROD

OPERATIONS of captive lime plants such as those found in the water treatdepartments of various large municipalities, generally reflect a development based on substantially different factors from those dealt with by a commercial installation. Among the factors in point would be a lower capacity requirement by the captive plant since its function is not dependent upon market economics, while on the other hand, peak efficiency is more critical in view of the absence of a "profit margin," and the fact that it must pay its way by operating at the lowest possible cost as one phase of a multi-phase operation.

Both of these factors were prominent in the design and development of the 30-t.p.d. lime reclaiming plant of the City of Lansing, Mich. Here, the requirements for treating an average of approximately 20,000,000 gal. of water per day, with subsequent reclamation of CaO from the sludge, indicated the feasibility of a calcining plant of the above tonnage capacity. However, the physical layout of Lansing's treatment plant and the area available posed problems as to the type and design of calcining equipment for which both erection and subsequent operating costs would be most favorable.

Several types of plants were studied by engineers on Lansing's Board of Water and Electric Light in a survey inaugurated about 10 years ago. As a result of that investigation, a pilot plant incorporating the fluidizing technique proposed by Dorr-Oliver, Inc., was constructed, and its operations were evaluated over a period of three years.

It was determined that the full-scale plant and equipment utilizing this Fluo-Solids process would not only answer the problem of limited ground area available for a calcining plant, but that the product obtained (in calcining the carbonate in the presence of an agglomerating agent) had several very favorable properties. The lime produced was



Comparable in appearance to a modern office building, this structure houses the city of Lansing's lime reclamation plant. Installed in the 50-ft. square and 75 ft. high building are the vertical calciner and all related equipment and controls.

Utilizes Fluidizing Techniques

Lansing's recalcining operations for water treatment involve unconventional feed, process, finished product

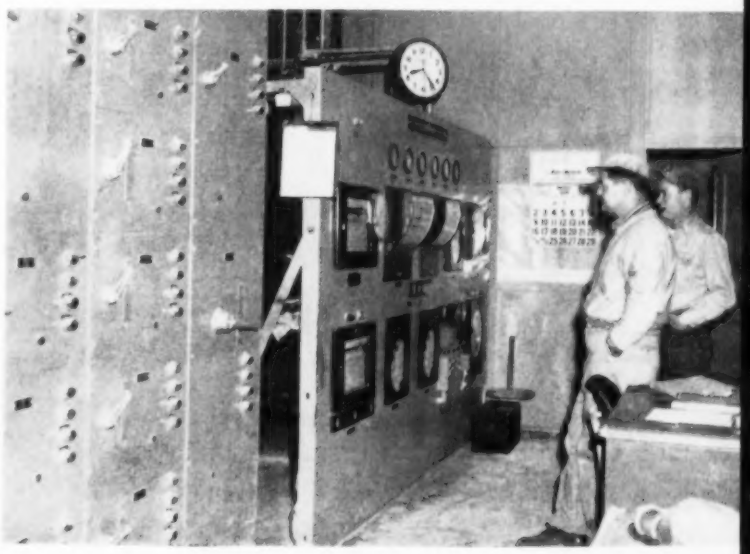
in the form of small, dense, and dust-free spheres which could be easily transported by pneumatic conveying equipment, could be stored for substantial periods, and showed no tendency to bridge across the draw points from storage bins.

The culmination of the preliminary survey and pilot plant evaluations was the construction of the present commercial scale facility. An attractive modern steel-frame structure with metal siding and glazed sections on all four sides from roof to ground level, the calcining plant is 50- by 50- by 75-ft. in dimensions. It houses the vertical reactor, as well as all other equipment and controls pertinent to the lime operations.

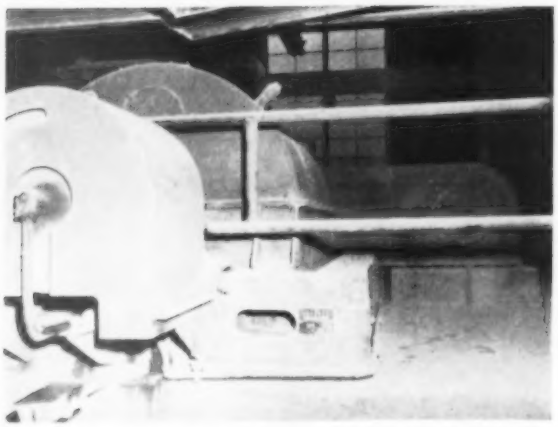
It was erected on a site close to the treatment plant, from which it is supplied fresh sludge for recalcination. Break-in operations were initiated late in 1954, and during the following 24-month period various modifications were developed on some phases directed toward increased fuel economy and simplification of the processing. The plant has now been in routine continuous operation for about two years.

As a preface to a description of the new plant, the following brief explanation of the water treatment at Lansing is pertinent. Michigan's capital city is one of those municipalities which draws its complete water supply from deep wells. Over 100 of the latter feed into two mains that supply the treatment plant—one on the north and one on the south side of the city. This raw water has an average total hardness, expressed as equivalent calcium carbonate, of 390 parts per million, and a non-carbonate hardness of 80 p.p.m. (See accompanying table.)

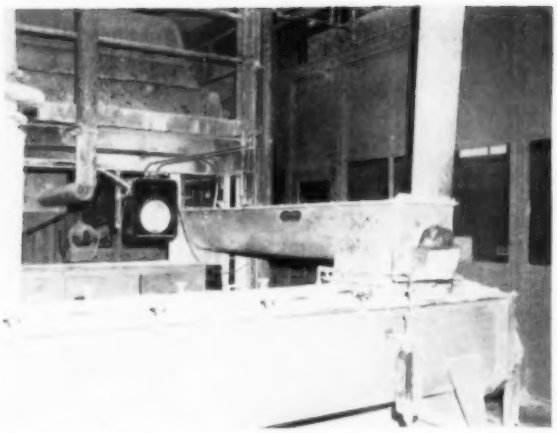
After softening treatment with lime and soda ash, the water has a total hardness of 86 p.p.m.—about 52 p.p.m. non-carbonate, and 34 p.p.m. carbonate. Sludge resulting from the treatment consists of about 85 percent carbonate, with a nominal percentage of magnesium



A view in the lime plant control room. At left is the power center control panel, and in the center background, the operating instrument panel. Fred Krause, left, chemical engineer for Lansing's Board of Water and Electric Light Commissioners, has worked closely with the project since its authorization.



About 80 percent of the solids in the sludge entering the reclaiming process are recovered in this 48- by 60-in. centrifuge. Discharged cake varies from 62 to 67 percent solids.



Centrifuge cake is delivered by screw conveyor to the mixer, foreground, where a solution of soda ash, and a certain amount of dried sludge are added for purposes described in the accompanying text.

hydroxide and small amounts of iron and other inerts. On a monthly average, the water plant treats about 500,000,000 gallons, and resultant sludge approximates 2,500,000 lb. in total dry solids.

	Raw Well Water	Treated Water
Total Hardness as $CaCO_3$	390 p.p.m.*	86 p.p.m.*
Carbonate harness as $CaCO_3$	310	34
Non-carbonate hardness	80	52
Free CO_2	34	
HCO_3	388	17
SO_4	47	47
Cl	28	28
Ca	99	17
Mg	34	11
Na	8	17
Average pH	7.4	10.92

*p.p.m. = parts per million

Prior to the erection of the lime reclaiming plant, the sludge from water treatment had been wasted into a set of disposal ponds. Although the lime plant now operates on a flow of waste sludge directly from the treatment plant, the material in the old ponds may be reclaimed when it may be desired to process lime for the commercial market.

The heart of the lime reclaiming plant is, of course, the 6- by 16-ft. I. D. FluoSolids reactor. However, preceding that phase, the feed is put through some processes that are unusual in comparison with those involved in standard commercial lime production.

The first step in the flow involves pumping fresh sludge from the treatment plant to a carbonator in which it is exposed to waste gases containing carbon dioxide. This treatment improves subsequent settling, as well as separation of certain contaminants present to a nominal percent. From the carbonator the sludge enters a 10- by 15-ft. R. C. Mahon gas scrubber and joins the scrubber water to flow to a thickener.

In the latter, a 30-ft. diameter Dorrco 4-tray unit, in which 99 percent of the solids in the feed are recovered, the sludge is thickened to a consistency varying between 18 and 38 percent solids. This is then fed at rates varied in accordance with flow conditions existing both before and after this stage to a 48- by 60-in. Bird centrifuge.

Approximately 80 percent of the solids fed are recovered in the centrifuge, which produces a cake ranging from 62 to 67 percent solids. This cake is discharged into a 16-in. diameter Jeffrey screw conveyor which transfers it to an 18-in. Raymond mixer. A solution of soda ash is added at this point, for purposes described subsequently; and to counteract the inherent stickiness of the centrifuge cake, a certain amount of previously dried sludge is also added. The latter results in the formation of lumps which will move freely through the mixer.

Following the above treatment, the material is discharged into a Raymond 6-ft. flash mill, where it is exposed to a stream of exhaust gases from the reactor for drying. These gases enter the mill at about 1,100 deg. F.; and in drying the feed from the mixer they undergo a temperature drop to approximately 400 deg. F. On exhausting from the mill, the gas stream carries with it the finely divided material created by impact reduction of the sludge lumps, and enters a 6-ft. Raymond cyclone. The dried carbonate is dropped out of the stream at this point, while the gases continue to the scrubber, from which they are exhausted to atmosphere at about 135 deg. F.

A portion of the dried material collected in the cyclone is, as noted above, piped back to the mixer to condition the sticky centrifuge cake. The remainder is transferred *via* Fuller-Huron Airslide to a dry sludge storage bin. Flow of the carbonate from this bin to the reactor is accomplished with a Fuller-Kinyon pumping system that is provided with 4 to 5 lb. of air by a Spencer 3,000-c.f.m. blower. The latter unit also provides combustion air for calcining. Reactor feed is pumped to a manifold surrounding the calcining zone, and enters through seven ports.

In essence, the FluoSolids reactor at Lansing consists of a vertical steel cylinder divided into a larger upper compartment and a smaller one below by a 1-ft. thick perforated arch made up of 40 percent alumina refractories. The unit has an overall interior height of 16 ft. and a 6-ft. internal diameter.

Surrounding the upper, or calcining, compartment is a fuel oil manifold from which 8 burners are supplied. These consist of ⅛-in. stainless steel pipe with an outer jacket

of ¼-in. mild steel. Bunker C oil is delivered to the burners under a pressure of approximately 20 p.s.i. by 8 Hills-McCanna oil pumps. Each injection of fuel through the burners is followed by a shot of high-pressure air to clean the pipe and prevent carbonization of the nozzles.

As installed at Lansing, the calciner involves certain modifications and design features relating to this specific operation, but its operation is based on the same fluid bed techniques used in certain petroleum processing (where it was originated) and by a commercial lime producer.* In this sludge recalcination, four actions take place virtually simultaneously—combustion of the fuel, calcination of the fine (½ to 30 microns) carbonate feed, pelletization of the latter, and fluidization of the pellets.

As noted earlier, the dried carbonate enters the reactor through ports from a surrounding manifold. In normal operations, the calcining bed has a depth of 6 to 7 ft., and is fluidized by the stream of combustion gases. Air for combustion is introduced at room temperature into a windbox under the lower compartment. The preheated air then passes upward through the perforated refractory arch and enters the calcining compartment.

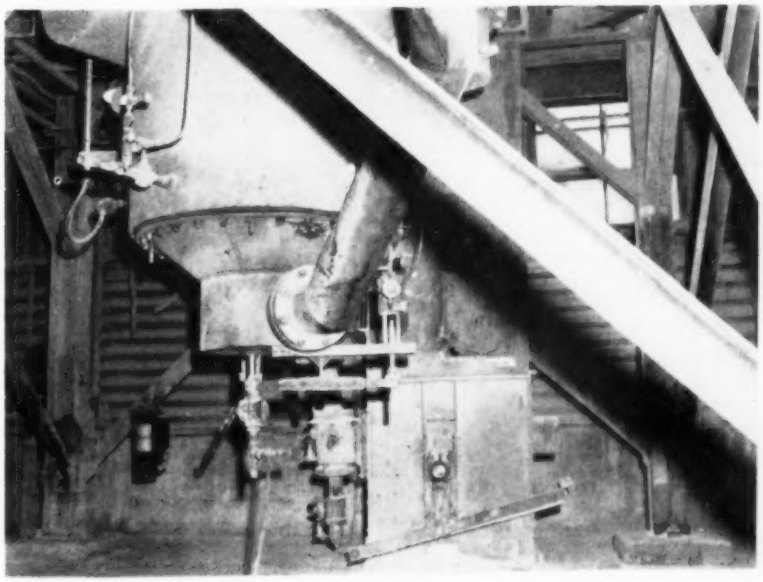
As the carbonate-soda ash mixture is fed into the lower area of the calcining bed, the soda ash melts and develops an adhesive surface. Due to its small particle size, the carbonate calcines almost immediately at a temperature of 1,500 deg. F. and is held by the molten soda ash. This causes the calcined material to build up layer upon layer, and due to the fluidizing action of the combustion air, it is rolled into pellets.

Close control of the air flow must be maintained in order to maintain proper fluidization, and at the same time the rate must not be such that the finer particles are stripped from the bed. This control is accomplished with instrumentation that measures the pressure differential across the perforated arch. In accordance with normal operating conditions, a valve at the bottom of a vertical pipe connecting the two compartments is actuated to allow continuous passage of the calcined pellets from the upper compartment to the lower, or cooling, compartment. The bed of cooling material ranges from 1½ to 3 ft. in depth.

Similar instrumentation-control linkage opens a valve that allows the cooled pellets, at about 400 deg. F., to pass from the cooling zone to the boot of a bucket elevator for transfer to storage.

Operation of the reactor and related equipment is handled from a central control room housing a Westinghouse power control center and an instrument panel. The latter

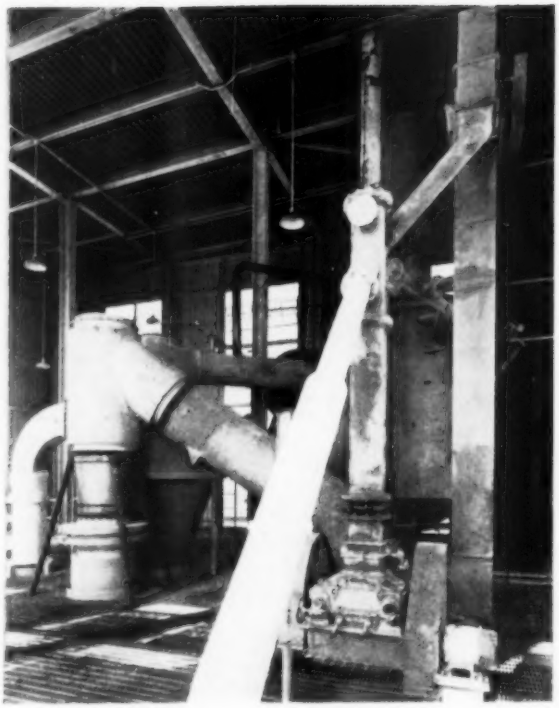
Right: A view of the upper compartment of the calciner showing a part of the feed manifold, and some of the eight oil-fired burners. The unit has internal dimensions of 6- by 16-ft., and was installed with a design capacity of 30 t.p.d.



Below: A perforated refractory arch separates the cooling compartment (lower part seen here) from the upper compartment of the calciner. Cooled pellets are delivered to the bucket elevator, rear, for transfer to the double-roll crusher or to the lime storage bin.

*See PIT AND QUARRY, May 1956, p. 122.

Above: After mixing, the sludge is dried in this flash mill, where it is exposed to hot exhaust gases drawn from the calciner.

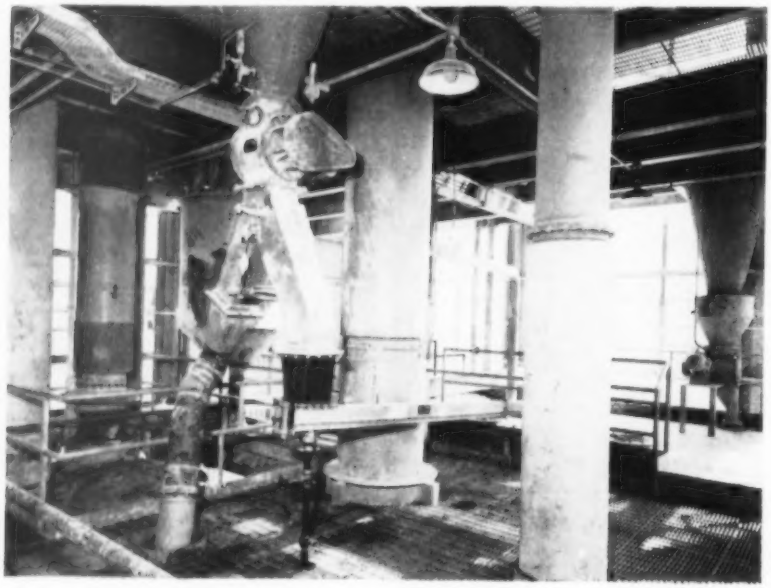


Right: At the left is the cyclone in which dried carbonate is collected from the exhaust gases. The latter enter the gas scrubber right rear, prior to exhausting to atmosphere. In the foreground is the crusher in which calcined "seed" is prepared for return to the calciner.

accommodates Minneapolis-Honeywell temperature and pressure recorders, feeder controls, draft gauges, flow recorders, and flow indicators. Control of the plant's electric motors, totalling about 460 hp., is handled from the power panel.

During the early operating period, it was learned that higher production rates—with a constant air rate—resulted in greater fuel economy, and that the unit was most efficient when operated near its design capacity of 30 t.p.d. While an average consumption of about 10,000,000 B.t.u. per ton of lime had been experienced, the operations are currently approaching the goal of 8,000,000 B.t.u. This will parallel an anticipated increase in capacity of about 25 percent. In conjunction with the increased efficiency at higher production rates, the latter have also shown a decrease in such fixed costs per ton as labor, power, water, and heat.

A portion of the dried sludge collected in the cyclone is returned to the mixer via the pipe on the left leg of the split chute, while the remainder is conveyed to a dry sludge storage bin.



As discharged from the cooler, the lime pellets are raised in a 65-ft. Rex bucket elevator to the top floor of the plant, where they are fed to the storage bin or to a Sturtevant double-roll crusher. The portion reduced in the crusher is dropped to an underlying "seed" tank from which it is withdrawn on a Syntron feeder and piped back to the calcining compartment of the reactor. This is due to the fact that the raw carbonate feed builds preferentially on the calcined particles already present, and the material returned from the crusher serves as "seed" to replace those pellets drawn off as finished product. This provides control over the size of the lime pellets produced.

The finished product, consisting of lime spheres ranging from about 20 mesh to ¼ in. in size, is practically dust-free. Non-porosity and high bulk density (70 to 72 lb. per cu. ft.) of the pellets is due to the fact that the carbonate particles are

calcined before pelletization takes place. Analyses of the finished lime and of the carbonate sludge from which it is derived are presented in an accompanying table.

	Analyses	
	Raw Sludge	
$CaCO_3$	86.5—88.5	percent
$MgOH_2$	9.5	"
Inerts	2.0— 4.0	"
	Finished Lime	
CaO	88.0—91.5	percent
Soda ash	1.05	"
Inerts	7.5—11.0	"

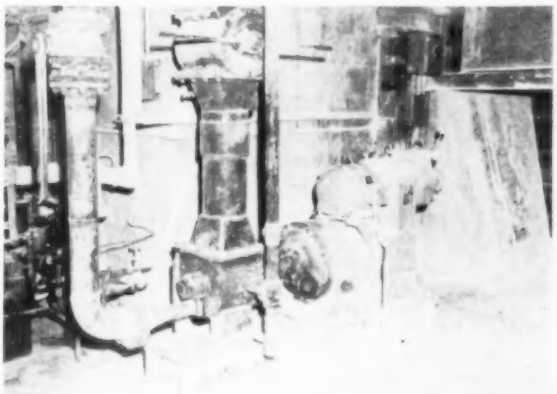
The pellets are stored in an 864-cu. ft. bin which, like the adjoining dried sludge and soda ash bins, is equipped with high- and low-level Bindicators. They are withdrawn by a Fuller Airveyor system for transfer to the water treatment plant, where the lime is used in the softening process at the rate of about 2,200 lb. per 1,000,000 gal. of water treated.

Currently, the calciner is recovering about 90 percent of the lime used in the treatment plant. However, it is expected that a few minor adjustments to the unit, now in process, will result in recovery of 96 to 102 percent of the treatment plant lime requirements. Included are the lime used in treatment, plus that which is naturally present in the raw water.

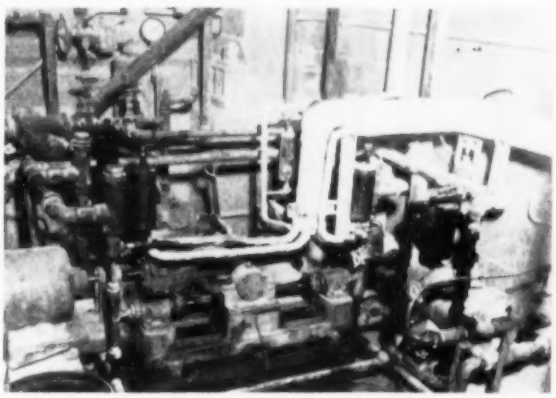
Operations of this interesting and unusual lime plant are handled by a crew of five men. One of these is available for relief work and for maintenance. Actually, with the exception of four of the 21 shifts per week, only one operator is present at any one time.

Much of the pilot plant evaluation and breaking-in operations of this installation have been the responsibility of Fred Krause, chemical engineer for Lansing's Board of Water and Electric Light Commissioners, who has been detailed to the project since its authorization. Top officials who played major roles in developing the plant include O. E. Eckert, general manager of the Board; Claude R. Erickson, engineering department; George A. Abbott, chief of plants; and John F. Dye, chief operator, water plant.

This unit is provided with 4 to 5 lb. of air for pumping of dried carbonate to the feed manifold of the calciner.



Bunker C fuel oil is delivered to the burners by these pumps.



Colombian Cement Production Declines Slightly in 1957

Cement production in Colombia, South America, totaled 1,208,357 metric tons in 1957, compared with 1,220,456 tons in 1956. The decrease in production is attributed to the lag in new plant construction in some areas.

Combined annual capacity of all operating plants in the country is about 1,500,000 tons of portland and 30,000 tons of white cement. New plants and the expansion of existing facilities are expected to increase the annual production of cement by 450,000 tons by mid-1959.

Cementos de Boyaca, located near Paz del Rio, began operation last summer with an average production rate of 500 tons per day. Plans reportedly are being made to increase capacity to 1,000 t.p.d.

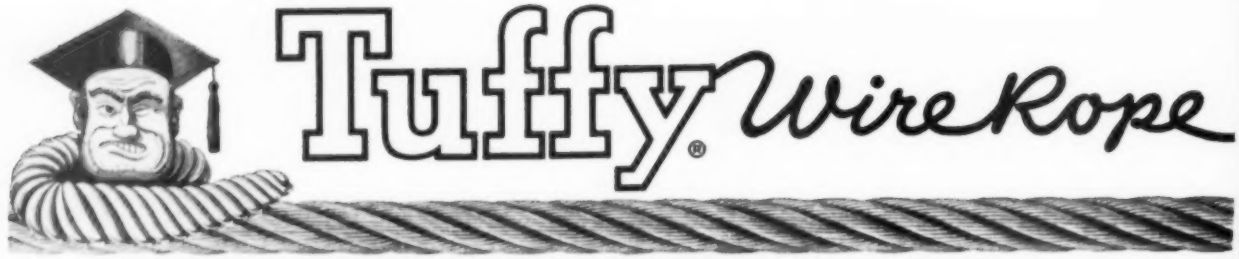
Cementos de Caldas which has a $1,350,000 plant at Neira, Caldas, will begin producing cement during the latter half of 1958, with a capacity of 300 tons per day when installations are completed. This concern is a subsidiary of Cementos Argos.

A subsidiary plant of the Cementos plant of the Cementos Portland Diamente Company, is being built at Buenos Aires, Tolima. When completed (early in 1959), the plant capacity will be 300 t.p.d.

Three existing Colombian firms have increased their production capacities. At Cementos del Caribe, Barranquilla, and Cementos El Cairo, near Medallin, production was increased from 600 to 900 tons daily in each plant, with the installation of a new kiln. Cementos del Valle, near Cali, has reportedly increased production to more than 1,000 tons daily.

The Isafahan cement plant of Iran was to have begun operating during the first half of 1958 with an estimated production of 200 metric tons per day, or 60,000 tons a year, according to a report from the U. S. Bureau of Mines. An initial capitalization of approximately $1,300,000 was raised by 26 stockholders. Cost of the plant was estimated to be about $2,300,000.

Production of roofing granules sold or used in 1957 in the United States as reported by producers to the U. S. Bureau of Mines totalled 1,625,000 short tons, valued at $35,006,000. The 1957 decline in home building was reflected in the roofing-granule industry by a decrease of 4 percent in production. The average value per ton was $21.54, an increase of 8 percent over 1956.



"Preventative Maintenance" Will Give You Longer Wire Rope Service

Every motorist knows the importance of proper lubrication for cars. It's essential for wire rope, too. For wire rope is a "machine" of precision moving parts. And friction is enemy No. 1 of all machinery.

Lubrication during fabrication

There are two distinct phases of lubrication: in manufacture, and in use. Wire rope engineers consider the lubricant as part of the rope; the kind, consistency and amount of lubricants are controlled and applied as required. Applications are usually made hot for the inside and external surfaces.

Lubrication in the field

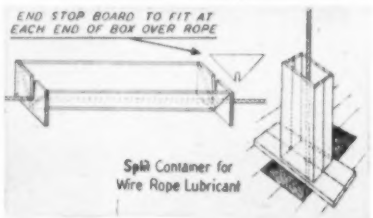
Here only an external application of lubricants is possible. It must penetrate to the inside of the rope to get a film of oil between the strands and the core. The lubricant can be applied either hot or cold, depending on its penetrating quality.

To find the best lubricant for your wire rope, talk to a local oil company engineer. He'll recommend the oil and method of application best suited to your needs.

How much and how often?

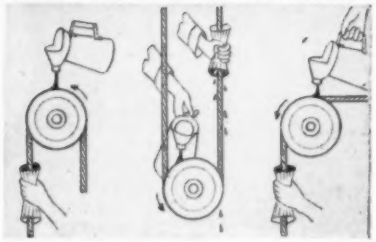
There's no set rule. It depends on service conditions. The heavier the duty, or the greater the number of bends, or the more corrosive the fluids in which the rope operates, the more frequent should be the lubrication. Remember one thing. The core is not an oil reservoir for external lubrication of the rope. No such action takes place. The oils "built" into the fiber core during its fabrication are to preserve and lubricate the vegetable fibers, not the external steel wires.

Two Types of "home-made" oiling devices



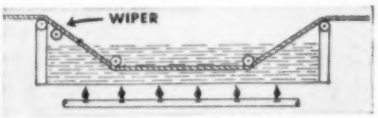
They're simple and do a good job. One is for vertical ropes, the other for horizontal. A heavy crankcase oil, cylinder oil or similar lubricant, preferably heated, is placed in the lubricators when the rope is run through.

Other Methods of lubrication



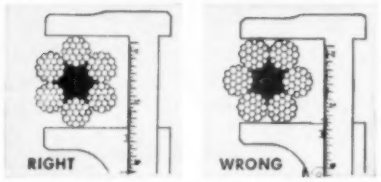
The pour-on method for manual lubrication is effective when penetrating, yet adhesive, oil is used. Oil should be hot. Hold the wiping swab BEHIND the sheave. This catches any excess oil that would be carried on along the rope.

Metal split box for bath treatment has a burlap collar or wiper at outlet end.



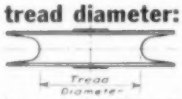
Hot bath method of applying heavier-bodied lubricant at high temperature. Gas burners or steam heat may be used. Pre-heated lubrication is always more penetrating. Rope should run through slowly to insure penetration.

How to measure rope diameter:



Use a machinist's caliper. Be sure to measure the widest diameter.

How to measure tread diameter:



Select smallest sheave or drum to be used with new rope, and measure actual diameter of tread.

Sheaves with grooves corrugated with rope lay impression should be replaced with new ones before installing new wire rope.

New ropes are usually over-size. It is advisable to have groove diameters of sheaves or drums as large as the actual calipered diameter of the new rope, or slightly larger. We recommend sizes as follows: 58-4

Tips

Too much strength can be a weakness... Wire rope must be BALANCED

Recommended sizes:

Diameter of Rope	Minimum Dia.	Maximum Dia.
1/4-5/16	+ 1/64"	+ 1/32"
3/8 - 3/4	+ 1/32"	+ 1/16"
7/8 - 1 1/8	+ 3/64"	+ 3/32"
1 1/4 - 1 1/2	+ 1/16"	+ 1/8"
1 5/8 - 2 1/4	+ 3/32"	+ 3/16"
2 3/8 and larger	+ 1/8"	+ 1/4"

How to check groove diameter:

Sometimes extra strength is heavily stressed in selling wire rope. While strength is important in every operation where wire rope is used, it is not the only important quality, and there are cases where excessive strength is a liability.

For example, the manufacturers of scrapers have designed the components of their equipment to take certain loads. These loads are controlled by or subject to the ultimate strength of the rope. Larger ropes with their accompanying higher strength do not break but *the equipment itself begins to* break up. Another feature of scraper rope is resistance to crushing. Strength is not the factor which controls the best design to resist crushing.

Union Wire Rope gives you the PROPER BALANCE of strength, toughness, flexibility and other properties most desirable for rope efficiency and long life. Don't settle for less. Your Union Wire Rope distributor has the BALANCED rope for every use.

Ordering is ABC-Simple!

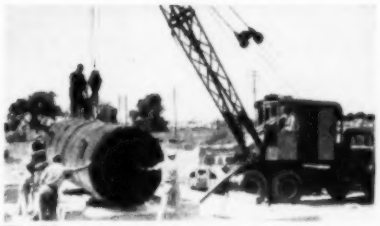
No complicated codes or long list of specifications. Just say "Tuffy," give type (Scraper Rope, Dozer Rope, etc.), length wanted and size. Just that easy!

Good Man to Know — Your Nearby Union Wire Rope Distributor

Whether your wire rope need is a scheduled replacement or a red-hot emergency, your Union Wire Rope distributor is ready with "right-now" service. He keeps varied stocks of Union standard constructions and the Tuffy Special Purpose Ropes. And he's backed by quick service from his nearby Union Wire Rope depot.

If it isn't rope you need, but advice on a wire rope problem, he's just as ready to help. If you don't know your Union Wire Rope distributor already, look under "Wire Ropes" or "Slings" in your telephone directory yellow pages.

Special Purpose Ropes: tailored & BALANCED for special uses

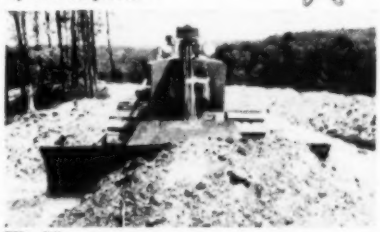


Tuffy BALANCED Slings & Hoist Lines

Top-performing team in every type of materials handling. Tuffy Slings are made of a patented, machine-braided fabric; stays extra flexible, can't be seriously hurt by knotting or kinking. Tuffy Hoist Line is a special construction of super flexibility and toughness.

Tuffy BALANCED Scraper Rope

It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Moves more yardage per foot because it's specially built and balanced to take the beating of drum-crushing abuse.



Tuffy BALANCED Dozer Rope

Built to give you longer service with less downtime. 150' reels of 1/2" or 9/16" mounted on your dozers allow you to cut off worn sections without wasting good rope. Put Tuffy Dozer Rope on the job and watch costs go down!

Tuffy BALANCED Dragline Rope

Made to give you maximum abrasive resistance with super flexibility. Rides smoothly on grooves; hugs the drum when casting for full load. Consistently dependable in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

union Wire Rope corp.

SUBSIDIARY AMCO STEEL CORPORATION

2132 Manchester Ave. Kansas City 26, Mo.

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

Enter 126 on card, page 105

New York Trap Rock's 4-Star Plant

Distinguished for

- ★ Unusual fine products capacity
- ★ Flexibility via optional flows
- ★ Optional raw surge storage pile
- ★ Complete dust collection control

Flight view of the new West Nyack, N.Y., plant of New York Trap Rock Corporation. Only the primary crusher and feeder of the predecessor plant were retained. All other phases were constructed on a design incorporating maximum flow flexibility, efficiency, and greater capacity of smaller aggregate sizes.

at West Nyack

By WALTER E. TRAUFFER

The present quarry face has an average height of about 80 ft., but subsequent advance will develop a face up to 160 ft. high.

ANOTHER ON THE SPOT REPORT

INDUSTRY in this country has been expanding rapidly for many years, with larger new plants replacing the older ones. This has been particularly true in the nonmetallic minerals industries, including crushed stone. It is a little unusual, therefore to find a new plant with only a nominal difference in capacity from the one it replaces. However, the reliable capacity in terms of annual output has considerably increased.

Such a plant was recently put in operation by the New York Trap Rock Corporation at West Nyack, N. Y. This 300-t.p.h. operation replaced one which was no longer capable of meeting the changing demands in its marketing area; it was also subject to frequent breakdowns and production stoppages.

The New York Trap Rock Corp. in December, 1955, bought the property and a 25-year-old plant of the West Nyack Trap Rock Corporation and operated it during 1956 and 1957. This plant was then rated at 250 t.p.h., but it lacked the necessary capacity for small sizes. The secondary crusher was too small, the bucket elevators were inefficient, and the loading bins were so small that too much material had to be hauled to stockpiles and later reclaimed. Originally built in the 20's, this plant was of wooden construction and therefore a fire and safety hazard; and there was no dust control.

There was no possibility of modifying or expanding the operation successfully; so it was decided instead to build a complete new plant which would in every way meet the company's needs and desires. A plant was therefore designed which would have a reliable 250-t.p.h. capacity, crushing down to the smaller sizes now in demand. Construction was started on December 26, 1957, and the new plant went into operation in May, 1958. Large stockpiles built up in advance prevented any loss of business during this period.

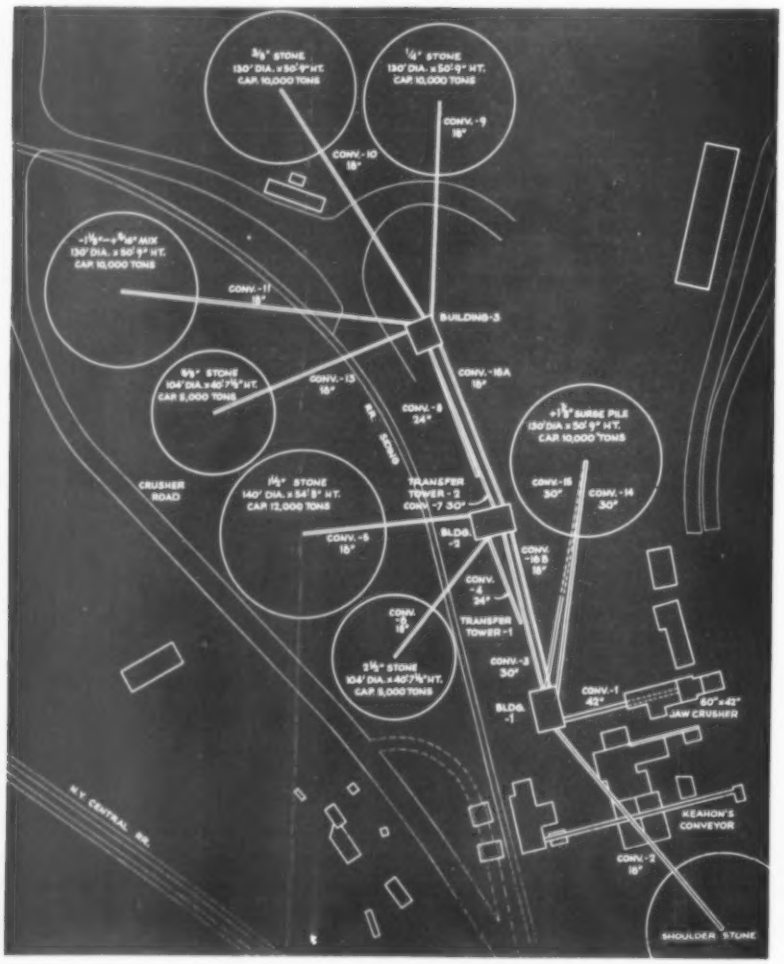
In the foreground of this view looking toward building 2, is conveyor No. 14 on which oversize may be carried from the primary screen in building 1 to the surge pile. At bottom is the surge pile reclaiming belt emerging from the tunnel. The conveyor just beyond No. 14 returns minus 1/8-in. dust to building 1, while the belt (No. 3) at top center carries secondary crusher product to the coarse sizing screen in building 2.

One of the feeders in the surge pile reclaiming tunnel. This rock is delivered to the secondary crusher in building No. 1 when the surge pile is under draw.

The new operation is on the site of the old one; only the primary crusher and feeder were retained. The new plant has already demonstrated its ability to produce 300-t.p.h. of sizes from 1½-in. down and with 85 percent minus ¾-in. When a second final reduction crusher is installed, it will be possible to crush everything to ¾-in. size and under.

The other and larger plants operated by New York Trap Rock on the Hudson River are primarily barge-loading operations producing rock for a wide variety of purposes which is shipped over a wide area. The new West Nyack plant is an inland operation shipping by rail and truck in a comparatively limited area. Since the New York Thruway (Tappan Zee) Bridge was completed, this area has exploded into residential and other construction, resulting in much blacktop pavement, driveways, etc., requiring fine materials.

A plan of the completely new plant at West Nyack.



Features This plant was designed for flexibility, and this quality was definitely obtained. Optional flows are possible, to make any desired products in the desired quantities; and these are achieved mainly through simple split chute arrangements. Production bottlenecks are eliminated by the provision of adequate secondary crushing capacity, the primary surge pile, and the ample screening capacity. Capability to produce small sizes at capacity will be further improved by the early installation of a additional crusher. Efficient dust control was also achieved through the use of three separate collection units at the three main buildings. Such control is not only a company policy for the comfort of its employees; it was doubly necessary at this location near a growing suburban residential area.

The use of a raw surge pile is becoming accepted practice in modern new plants because it acts as a buffer to prevent operating delays in either the quarry or plant from affecting the other. For topographical reasons, only a limited space was available for this plant, and it was necessary to locate this pile to one side as an alternate flow, rather than as the more common direct flow. This arrangement has the advantage that the main flow most of the time by-passes the pile, saving one storage and reclaiming operation. Yet it is available at any time to keep the plant going while the quarry is down, or *vice versa*.

Another feature is the fact that the finished material stockpiles are arranged in two rows, so that reclaiming tunnels and conveyors can later be installed. These would converge to a single loading conveyor.

Deposit The deposit is the very hard and abrasive trap rock or diabase of the Triassic Age which is common to this area. This formation runs in a narrow band

up the west side of the Hudson River from Bayonne, N. J., about 40 miles to Haverstraw, where it strikes west for a few miles. It is an igneous intrusion in a columnar formation which is at right angles to the bed of the material. At this location the rock is somewhat harder than usual; it has a specific gravity of 2.93 and a 46,000-lb. p.s.i. compressive strength; and its abrasion loss by the Los Angeles method is only 16 percent.

Quarrying The overburden at this location averages 8 to 10 ft. of loam, with trees, shrubs, etc., and there are some pockets. Stripping is done by a dragline, and trucks dump this material into a pile from which it is loaded out for sale.

As the quarry is in the side of the hill, its present face, averaging about 80 ft. in height, will get up to 160 ft. high in places as operations proceed. The face will be worked in three levels. The first or upper one—41 ft. in height—will swing around in a semi-circle, to face to the north.

Blast holes are being drilled with an Ingersoll-Rand Drillmaster using 6½-in. I-R carbide-insert bits. This drill averages about 12 ft. of hole per hour. Holes are drilled 18 ft. apart in a single row, with 19 ft. of burden.

Shots of up to 23 holes are made, using DuPont Nitramex in the bottom and Nitramite at the top of each hole. The intention is to use ammonium nitrate prills later when further development of the face eliminates an existing water problem. Electric caps, and MS connectors on a Primacord trunk line are used with 25 millisecond delays on the caps and 17 milliseconds on the connectors. The powder factor is held at about 0.7 lb. per cu. yd. of solid rock, and the yield is about 1.8 times that or about 2½ cu. yd. per lb. of explosive.

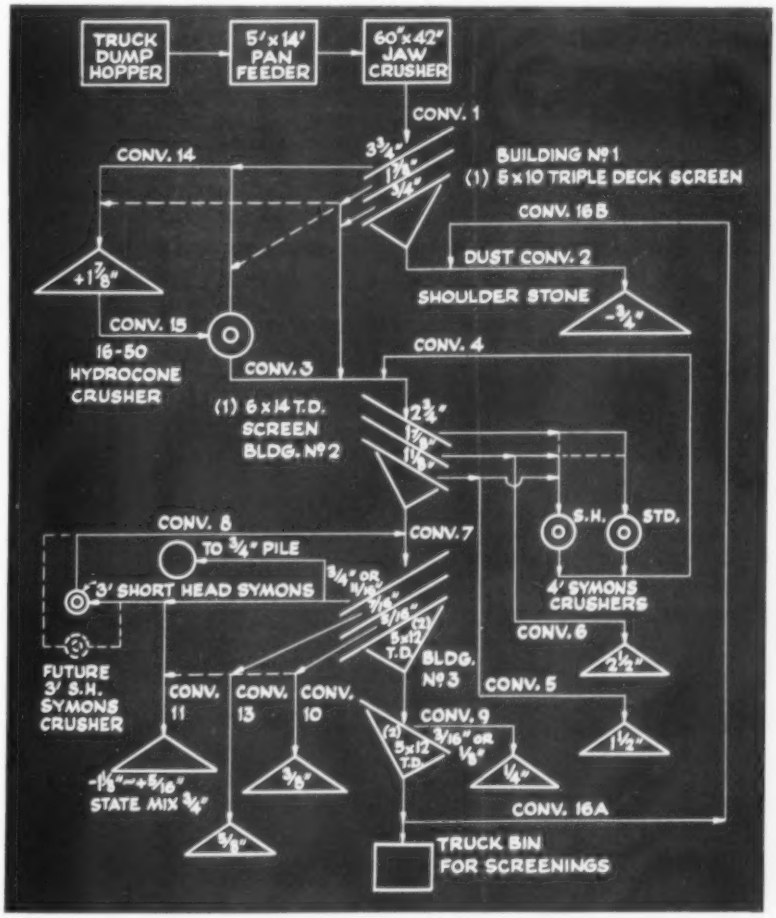
The company owns a Leet seismic recorder, and every shot using over 500 lb. of explosive is checked by a company specialist.

Drilling for toes is done with Gardner-Denver Airtrac drills and some block-holing is done with I-R Jackhamers. Most of the secondary breakage is done by a Lima crane with a 50-ft. boom handling an 8,000 lb. Cape Ann drop ball. This ball is used until it wears down to about 3,000 lb. A type of cable hitch has been developed which has given excellent results. The cable is attached to an aiti-friction swivel, which in turn is connected to 5 or 6 ft. of tough alloy chain. A regular hitch is attached to the drop ball. This arrangement was worked out by George W. White, superintendent of the Clinton Point plant. Air for the Drillmaster and for the other drills is supplied by two I-R 600 Gyraflow portable compressors.

Loading Most of the loading is now being done by a 54B Bucyrus-Erie diesel shovel with a 2½-cu. yd. dipper. A P&H 955A diesel shovel with a 2½-cu. yd. dipper will be used in the new development. Hauling is done by three Euclid diesel-powered rear-dump quarry trucks which carry 14-ton loads. The present haul is about ¾ of a mile and is nearly level. In the development of the new upper level, one of the trucks will be used there, with a longer but downgrade haul.

Crushing Raw Storage The trucks dump into the old primary crushing setup, which consists of a 5- by 14-ft. pan feeder and a 60- by 42-in. Farrel-Bacon jaw primary crusher, the latter driven by a 250-hp. motor. The minus 6½- to 7-in. stone from the crusher is carried on 42-in. by 147-ft. belt conveyor No. 1 to building No. 1, where it is discharged on a 5- by 10-ft., 3-deck Ripl-Flow scalping screen. This unit is equipped with 3¾-, 1⅞- and 1⅛-in. wire cloth.

Flow diagram illustrating the flow flexibility. High capacity in smaller sizes was provided.



Left: An unusual shot taken toward the mouth of the reclaiming tunnel under the surge pile. The rock is fed onto the belt at any desired rate by a pair of rheostat-controlled vibrating feeders.

Right: One of the two front-end loaders which rehandle stockpiled materials for all loading. Truck shipments are weighed out over one of two scales that are installed at different yard entrances.

Normally the three top sizes flow through the plant for further processing, with the oversize going by gravity to a secondary crusher and the second and third sizes by-passing the crusher and joining its products to the first sizing screen. The minus 1⅛-in. material through the bottom deck always goes, *via* 18-in. by 226-ft. conveyor No. 2 to a 25,000-ton stockpile as shoulder stone.

There are a number of options at this point which can be used as desired or necessary. There are two optional flows for the oversize and three for the second size. The oversize (3¾- to 7-in.) instead of going direct to the secondary crusher, can be discharged on 30-in. by 260-ft. belt conveyor No. 14, which discharges it from an elevation of 52 ft. onto the 10,000-ton surge pile.

The 1¾- to 3¾-in. second size, instead of by-passing the crusher, can go with the oversize to the stockpile on conveyor 14, or it can go by gravity to the secondary crusher. Only in an emergency, when the processing plant is operative, all three top sizes can go to the surge pile, with the fourth size, of course, going as usual to its pile.

The surge pile serves primarily as assurance of supply in case of stoppage in the quarry or in the plant ahead of it. It can also be drawn from at other times as necessary. In the 80-ft. tunnel under this pile two 36- by 60-in. F45 Syntron rheostat-controlled vibrating feeders can feed material at any desired rate onto the 30-in. by 204-ft. tunnel reclaiming conveyor (No. 15). This tunnel feeds direct to the No. 16-50 Allis-Chalmers Hydrocone secondary crusher, which has Hydroset control.

Reduction Crushing This crusher is usually set with a 1¼-in. opening on the closed side and 2¼-in. on the open side. It discharges on 30-in. by 162-ft. belt conveyor No. 3, which also normally receives the second and third sizes from the scalping screen. This material, 3¾- to ¾-in., is discharged onto the 6- by 14-ft. Gyrex 3-deck coarse sizing screen in building No. 2. This screen has 2¾-, 1⅞- and 1⅛-in. openings on its three decks, respectively.

Here there are also a number of options. The oversize (plus 2¾-in.) can go by gravity to either or both of two Nordberg Symons 4-ft. cone reduction crushers—a standard and a short-head. These units are set at 13/16- and ⅝-in. openings, respectively, on the closed side. The second size (2¾- to 1⅞-in.) can go by gravity to either or both of the cone crushers, or part or all of it can go onto 18-in. by 132-ft. stockpiling conveyor No. 6.

From the conveyor this material is discharged on a 5,000-ton stockpile as 2½-in. stone. The third size (1⅞- to 1⅛-in.) can go by gravity either to the short-head cone crusher or to 18-in. by 160-ft. stockpiling conveyor No. 5, or to both. From the conveyor, this material is discharged on a 12,000-ton stockpile as 1½-in. stone.

Screening The product of the two cone crushers is returned by 24-in. by 98-ft. belt conveyor No. 4 onto conveyor No. 3 ahead of the sizing screen. The minus ⅛-in. material through the bottom deck of this screen is carried on 30-in. by 174-ft. belt conveyor No. 7 to a pair of 5- by 12-ft. 3-deck Vibrex and Ripl-Flo fine sizing screens in building No. 3.

These screens have ¾- or 11/16-in. cloth on their top decks and 7/16- and 5/16-in. cloth on their second and third decks, respectively. Their products can follow the same flows or separate flows as desired. The plus ¾-in. material off the top deck can be chuted either

to a small stockpile as ¾-in. stone or to a 3-ft. Symons short-head cone crusher. This unit is set at ⅛-in. opening on the closed side. The crusher products is returned on 24-in. by 128-ft. conveyor No. 8 to belt No. 7 feeding these screens.

The ⅜- to ⅝-in. second size from these screens can be carried *via* 18-in. by 181-ft. conveyor No. 13 to a 5,000-ton stockpile as ⅝-in. stone. The ¼- to ⅜-in. third size can be carried *via* 18-in. by 236-ft. conveyor No. 10 to a 10,000-ton stockpile as ⅜-in. stone.

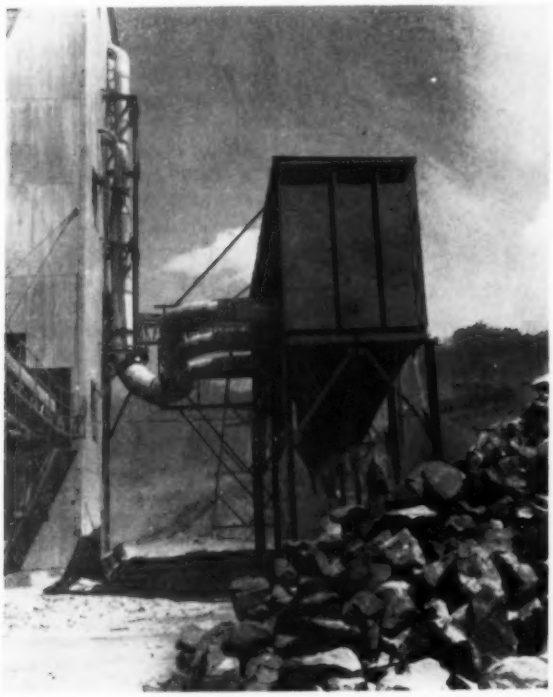
When desired, all three top sizes from either or both screens can be combined to make a minus 1⅛-, plus 5/16-in. state mix. This product is discharged by 18-in. by 254-ft. belt conveyor No. 11 into a 10,000-ton stockpile.

The minus ⅜-in. material through the bottom decks of both these screen is always discharged onto two 5- by 12-ft. Vibrex and Ripl-Flo single-deck screens. These units have 3/16-in. or ⅛-in. openings, as desired. The top size (⅛- to ¼-in.) is carried on 18-in. by 208-ft. conveyor No. 9 to a 10,000-ton stockpile as ¼-in. size. The minus ⅛-in. material through these screens goes by gravity to a 200-ton truck-loading bin as dust. A screw conveyor can feed from this bin to a series of two conveyors—No. 16A and No. 16B—onto dust conveyor No. 2 at the scalper.

Shipment All material shipped is loaded into trucks either for delivery or for transfer into railroad cars at a siding nearby. All loading is done by two 2½-cu. yd. Michigan 175A rubber-tired, diesel powered front-end loaders. All truck loads are weighed on one of two Howe scales located at different yard entrances. A Merrick Weightometer is to be installed on conveyor No. 1 to weigh all material coming into the plant.

Right: The secondary crusher, shown here receiving feed from the surge pile, usually is set with a 1¼-in. opening on the closed side and 2¼-in. on the open side. Note the dust collection hood and piping.

Below: All feed and discharge points of crushers, screens, conveyors, and chutes have hoods for dust collection. Shown here is one of the three separate collectors (one unit for each of the crushing and screening buildings). Company policy dictates efficient dust control for the comfort of employes, as well as for good neighbor relations.



Below, right: Stockpiling conveyors have conventional supports except near the discharge points, as seen here. The tubular columns shown offer little resistance to shifting material in the stockpiles, and consequently have an improved resistance to abrasion.

Dust Collection Three Wheelabrator circular tube-type dust collectors are used to keep the plant clean. These are connected by hoods and ducts to all feed and discharge points at crushers, screens, conveyors, chutes, etc. The No. 1 building is served by a No. 16 collector rated at 14,500 c.f.m. The No. 2 building has a No. 17 unit rated at 15,800 c.f.m. No. 3 building has a No. 31 collector rated at 28,400 c.f.m. All are provided with Chicago Airfoil fans. Collected dust is wasted at present.

Design The plant was designed co-operatively by the company's staff and the Eastern Engineering Sales Company, which also supplied the steel, conveyors, chutes, some of the screens, and other items, and also supervised all construction. All the stockpiling conveyors have conventional structural supports except at their ends, where round steel pipe columns of Eastern design are used. Since these offer little resistance to shifting material in the stockpiles, they are unaffected, and for the same reason they resist abrasion very well.

The plant is completely fireproof, being built of structural steel, with concrete foundations and footings, corrugated iron siding and roofing, and expanded metal floors, stairways, and walkways. Hand rails, drive guards, toe boards, etc., are also of steel. A special feature is the use of "Resolite" corrugated translucent plastic panels in the sides and roofs of the buildings, to provide adequate light in addition to that coming through the windows. A vacuum cleaning system keeps the plant floors clean.

Miscellaneous The plant electrical system follows modern practice. Public utility current received at 4160 v. is reduced to 440 v. for motors. Underground conduits are used from the main transformer to each building. All equipment is electrically interlocked through plugging switches of the owners' design, so that stoppage or marked slowdown of any piece of equipment automatically stops the one ahead of it. No machine can start until the one it feeds is in operation. Lockout switches are provided on all equipment. Each building has a switch panel for the equipment in it, and each machine also has a local stop switch.

The primary crusher is flat-belt driven by a 250-hp. motor. The other four crushers are V-belt driven, the Hydrocone, 4-ft. short-head cone, 4-ft. standard cone, and the 3-ft. short-head cone by 200-, 150-, 100- and 75-hp. motors, respectively. The five largest belt conveyors are driven through Stephens-Adamson herringbone gear reducers and chain, and the smaller ones through Falk shaft-mounted reducers and V-belts. All belt conveyors have Stephens-Adamson idlers, pulleys, and hold-backs, and all are equipped with Boston Woven Hose belts.

Personnel The design and construction of this plant were under the direct supervision of J. R. Kringel, vice-president, production, Henry Schwellenbach, production manager, M. C. Dow, chief engineer, and Luther F. Miller, electrical superintendent. George Foster is plant superintendent.

Talc, Soapstone, Pyrophyllite Show Dip in Output, Sales

Decreased demand for talc in ceramic products caused sharp declines in domestic mine production and sales of talc, soapstone, and pyrophyllite in 1957, according to reports by producers to the U. S. Bureau of Mines. Mine production of these commodities decreased 7 percent in quantity to 684,000 short tons and 1 percent in value, $4,796,000. Sales decreased 6 percent in quantity and 4 percent in value, compared with 1956. The volume of talc and soapstone produced was 8 percent less; pyrophyllite production fell off 4 percent.

New York, California, and North Carolina again ranked first, second, and third, respectively, in the quantity and value of talc, soapstone, and pyrophyllite produced in 1957. North Carolina remained the dominant pyrophyllite-producing state, followed by Pennsylvania (sericite schist) and California.

Ceramics, paints, insecticides, roofing, rubber, asphalt filler and paper consumed 84 percent of the talc and soapstone sold by producers in 1957. Sales reported for all of these major uses declined, except for paper which remained virtually unchanged.

Insecticides, ceramics, refractories, and paints consumed 64 percent of the pyrophyllite sold by producers in 1957. The largest decrease was for use in paints—49 percent.

Total 1957 imports of talc, soapstone, and pyrophyllite decreased 13 percent in quantity and 6 percent in value compared with 1956. Total exports increased five percent in value.

World production of talc, soapstone, and pyrophyllite decreased 3 percent in 1957 to 1,875,000 short tons from the all-time high established in 1956, but was the second-highest total ever recorded.

Churchill Construction Company of Lima, Ohio, has installed a 6,000-lb. automatic asphalt mixing plant. The new unit will be used to supply material for roads and highways.

Jackson Pike Sand-Gravel Exhibits H.M.S. Equipment

Officials of the Jackson Pike Sand & Gravel Company, Columbus, Ohio, and of F. W. Sloter Incorporated, invited more than 600 guests for a demonstration of a new heavy media separator, a 100-ton-per-hour mobile mill.

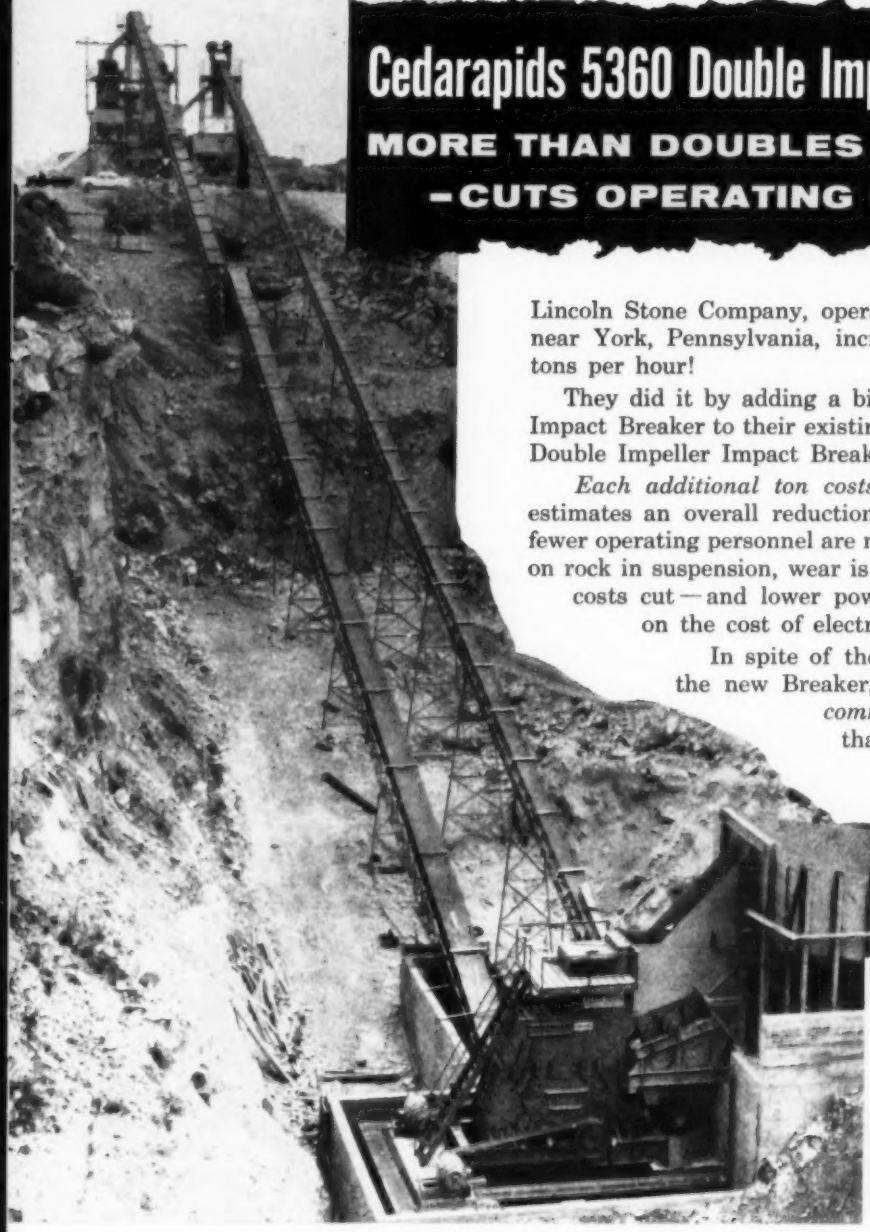
More than $125,000 was spent on the equipment and a new building. The process uses a gravity principle to skim off lightweight material. A dense solution of finely ground magnetite and ferro-silicon is moved through a revolving steel drum. Soft and porous material goes to the top, and the heavier part drops to the bottom. The h.m.s. equipment was supplied by the Western Machinery Company.

Shemal Cement Company, a privately owned cement plant near Tehran, Iran, began operating in April, 1958, with a capacity of 100 tons daily. The additional output will supplement the 600 to 700 tons produced daily in the Tehran area by the Rey and Tehran plants.

Enter 135 on card, page 105 →

Cedarapids 5360 Double Impeller Impact Breaker

MORE THAN DOUBLES PLANT CAPACITY –CUTS OPERATING COSTS BY 25%



Lincoln Stone Company, operating this 100% Cedarapids plant near York, Pennsylvania, increased capacity from 400 to 1000 tons per hour!

They did it by adding a big Cedarapids 5360 Double Impeller Impact Breaker to their existing plant, which consisted of a 4350 Double Impeller Impact Breaker followed by two Hammermills.

Each additional ton costs less to produce! Lincoln Stone estimates an overall reduction in operating expenses of 25% — fewer operating personnel are needed — with 50% of rock breaking on rock in suspension, wear is sharply reduced and maintenance costs cut — and lower power consumption saves 7¢ per ton on the cost of electricity.

In spite of the increased capital investment for the new Breaker, *Lincoln Stone can now produce commercial stone for at least ⅓ less* than local competition using different make crushers!

1000 Tons Per Hour? —1250? —1500?

"We can't feed this Breaker fast enough to find out what its capacity really is," says owner WALTER SIPE

Although Lincoln Stone doesn't know the actual capacity of their big new Breaker (it has been averaging between 900 and 1000 tph, 85% minus 5" stone), *they do know that their Cedarapids engineered plant is production-balanced* for big tonnages. Each Cedarapids unit — Breakers, Vibrating Grizzly, Hammermills, Screens, Conveyors — is in proper balance with the others in both size and capacity.

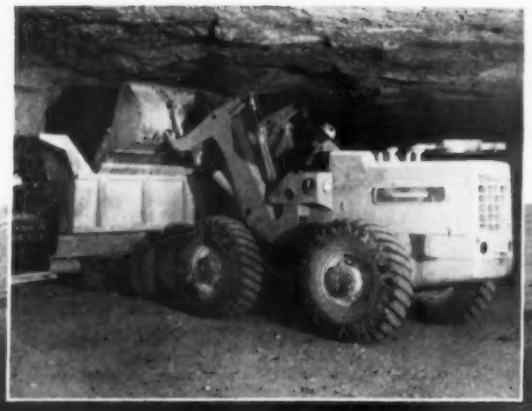
You can profit by the experiences of other Cedarapids owners. Your Cedarapids Dealer is well-qualified to help you combine expert engineering with the most productive equipment for your job. Call him today!

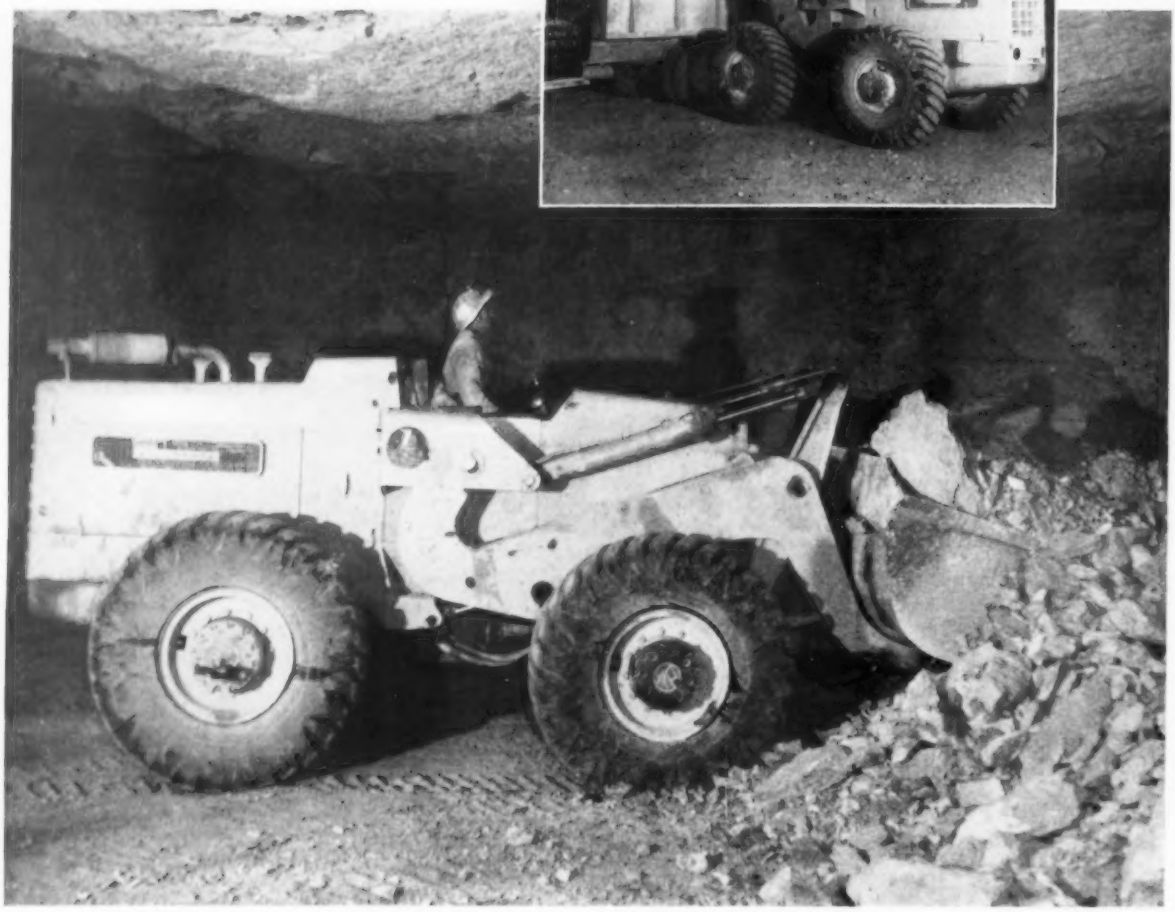
Production-balanced with the other units in the plant, two Cedarapids 5′ x 16′ triple deck Horizontal Vibrating Screens easily handle the big tonnages from the main plant conveyor.

Cedarapids Built by IOWA

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

How **PAYLOADER**® opens the door . . .





. . . to REDUCED OPERATING COSTS

AT UNION QUARRIES, INC. near Kansas City, limestone is mined underground by the room method. About half of the daily output of 2200 tons of rock is loaded into trucks by a PAYLOADER with 9,000 lbs. carry capacity. The other half is handled by a special power shovel.

"We will replace the shovel one of these days."

"We have noticed," says Foreman Gene Totten, "how easily the PAYLOADER is able to outwork the shovel. It moves around for scattered rock, works faster and makes a clean, neat job. We'll replace the shovel one of these days and my choice is another Hough for the job."

Union Quarries has found good use for the operating efficiency of an identical PAYLOADER in their storage yard above ground for stockpiling crushed stone and loading trucks. With its carry capacity of 9,000 lbs., this 4-wheel drive unit has good balance and traction to keep yard production moving without pushing. Pry-out bucket action digs the packed materials faster and easier than any wheeled tractor-shovel of comparable size.

This unique roll-back bucket action of the PAYLOADER gets and keeps a full payload during delivery; its power-transfer differentials and heavy-duty axles assure adequate digging power and reliable traction in any ground condition, and the power shift transmission, power steering and 4-wheel power brake features guarantee operating ease, operator safety and unmatched work-ability for the PAYLOADER.

AT BUCHANAN STONE COMPANY an all-electric crushing and washing plant produces 7 types of stone from granite that is sold within a 30-mile radius of Greensboro, North Carolina. Annual production runs about 300,000 tons and 80% of this material is stockpiled and loaded out later by their two 9,000 pound carry capacity PAYLOADER tractor-shovels.

2 PAYLOADER units replaced old loader and three shovels

How Buchanan converted its stockpile-load out operation from a 4-machine into a 2-machine 100% PAYLOADER set-up is related by W. L. Buchanan, Vice-Pres. and Supt. "We purchased our first PAYLOADER in March, 1957," to replace an older (smaller) loader. The Company particularly liked the mobility of the PAYLOADER that enabled it to work from several stockpiles almost simultaneously.

"In December we bought the second PAYLOADER to replace three ¾ yd. shovels on stockpile load-out. Both machines have been steady producers with minimum time loss. Matched engine power with PAYLOADER pry-out digging action and full capacity roll-back bucket lets our operators load-out 15 ton loads in 2½ to 3 minutes. In addition, they do general plant clean-up and maintenance work."

80% of Buchanan's 300,000 ton annual production is stockpiled and loaded-out with 9,000-lb. carry-capacity PAYLOADER tractor-shovels.

THE LIMESTONE DAYTON COMPANY has produced limestone road base materials from its quarry and crusher in Dayton, Ohio, for about 5 years. Crushing capacity of the plant is 5,000 tons per 8 hours and one 9,000 lb. carry capacity PAYLOADER does all the truck loading for this 100% stockpile operation.

1 PAYLOADER replaced previous two machines

This producer experienced a substantial saving in operating costs because, "the PAYLOADER does all our loading and has practically replaced a previous 2-machine operation with very satisfactory results," says Plant Manager John W. Leet. "It takes care of 35 to 40 truck units, hauling from stockpile during an everyday operation." On several occasions it has handled up to 3500 tons in 6 hours and also does general stockpile maintenance.

Perhaps the extra maneuverability and work-ability of 4-wheel drive PAYLOADER tractor-shovels is the solution to your "sky-high" equipment upkeep and operating cost. There is a PAYLOADER size to fit your work and a Hough Distributor ready to demonstrate. Ask him about Hough Purchase and Lease Plans too. The Frank G. Hough Co., 750 Sunnyside Ave., Libertyville, Ill. 10-B-1

PAYLOADER, PAYMOVER, PAYLOGGER and HOUGH are Registered Trademarks of The Frank G. Hough Co.

A 70-acre tract is the site of Limestone Dayton's 100% stockpile operation. One PAYLOADER loads-out the road stabilizing materials.

Modern Materials Handling Equipment
THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

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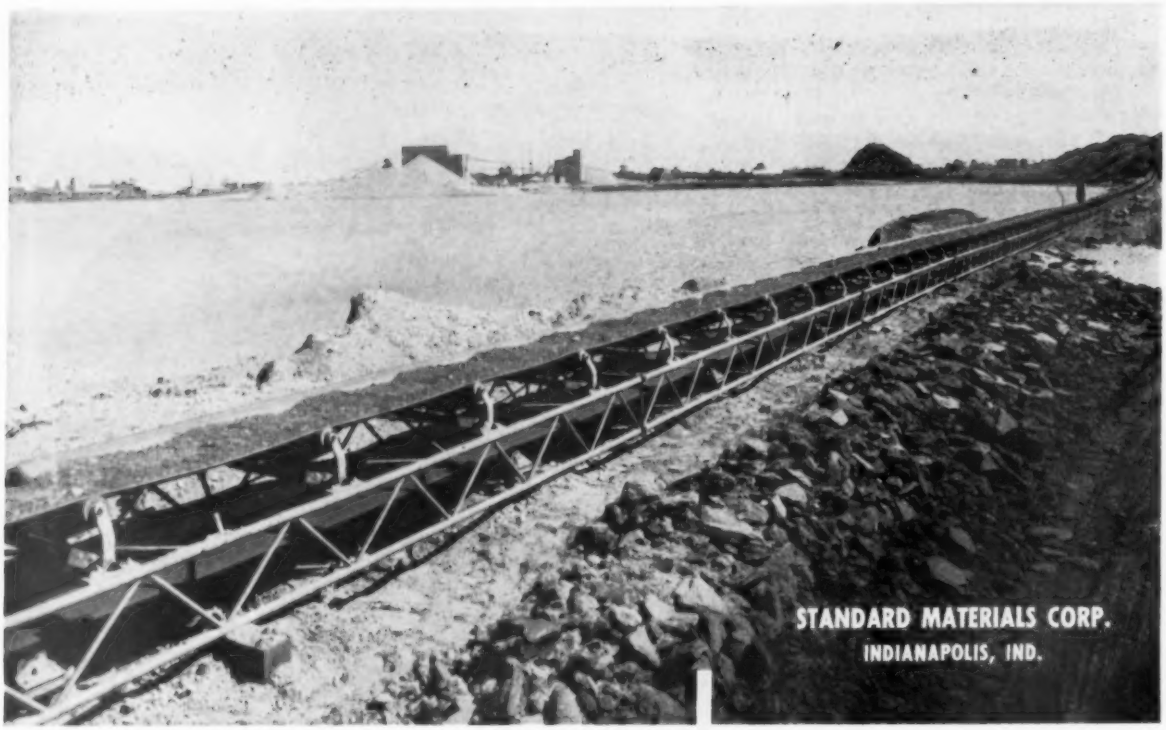


Standard Materials Corporation's new Indianapolis plant uses MARCO field conveyors exclusively. The 30" conveyor system transports 400 to 450 tph of sand and gravel around lake to plant site.

Conveyor units range in length from 500 to 800 ft.

A foot or a mile . . .

MARCO® field conveyors are your best buy

MARCO field conveyors are designed so they may be quickly assembled and later shortened, lengthened or rearranged — all without cutting or welding.

The greater rigidity of MARCO's *tubular frame* construction eliminates the expense of conveyor supports or foundations. These stronger frames resist misalignment and increase belt life.

Production is increased because MARCO field conveyors provide a continuous feed to plant machinery, — yet your investment and operating costs are lower. There are no haul trucks to buy or operate . . . no haul roads to build or maintain.

Specify MARCO on your next installation — large or small. The proven economies of MARCO field conveyors will increase your profits.

For more information consult your MARCO Distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

EXCLUSIVE CONVEYOR FEATURES OFFER MAXIMUM PROTECTION AGAINST BELT-EDGE DAMAGE

WIDER FRAME

MARCO Tubular Frames are widest in the industry. They provide 100% more space (5½") in the critical area — between belt edge and nearest frame member. Pedestal type return idler brackets are used, instead of hanger brackets that confine and damage belt.

WIDER FACE PULLEYS

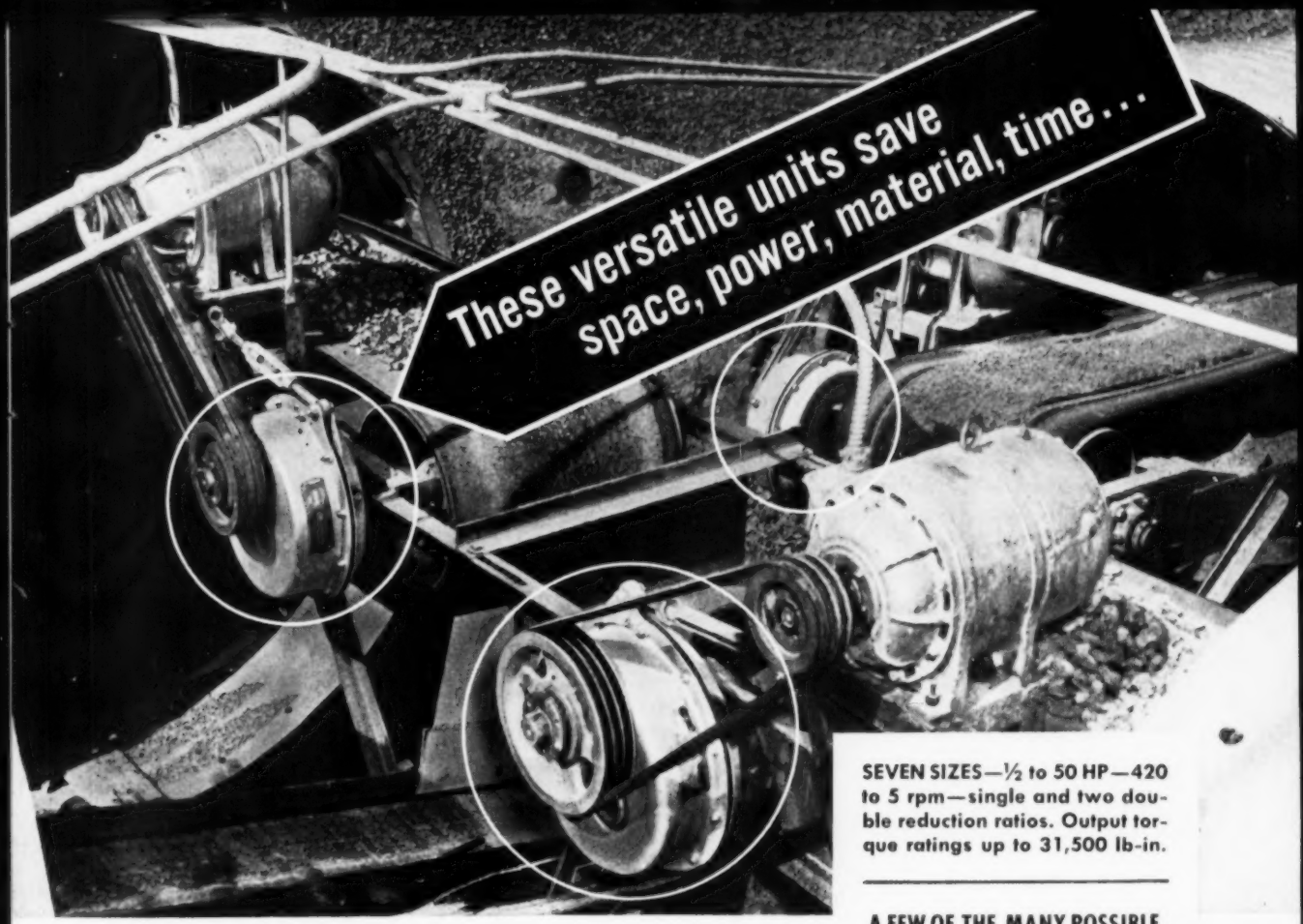
MARCO is first with modern pulley specifications. 2" between belt and pulley edge — provides 100% greater protection than outmoded standards. Reduces possibility of belt destruction caused by "belt wandering" in high tension areas.

MARCO's built-in belt protection is all the more important in field conveyor installations — since a minimum amount of time can be devoted to belt alignment.

MARCO®

engineered MARCO products:

Tubular Frame Belt Conveyors Conveyor Idlers Solid and Self Cleaning Steel Pulleys
Bucket Elevators Control Gates Feeders Bins



SEVEN SIZES—½ to 50 HP—420 to 5 rpm—single and two double reduction ratios. Output torque ratings up to 31,500 lb-in.

FALK ALL-STEEL Shaft Mounted Drives

The photograph above typifies the way FALK Shaft Mounted Drives furnish the economical solution to problems of efficient speed reduction in a limited space. Within their rated capacities, these versatile reducers are designed to drive any machine and to fit any space requirement.

FALK Shaft Mounted Drives mount on the driven shafts and are connected by V-belt or chain to any convenient rotating power source. Unlimited choice of output speeds between 420 and 5 rpm is made possible by varying the ratio of driving sheaves or sprockets.

These units, with precision-cut gears of highest efficiency, use a minimum of power. They need no adjustable motor bases or slide rails; thus they save material. And, because they are readily available and easily installed or moved, they save time. Best of all, they are backed by FALK's unmatched experience in precision-gear manufacture.

Promptly available from factory and distributor stocks, from *coast to coast*. Ask your Falk Representative or Distributor for details—or write us for **Bulletin 7100.**

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- Speed Reducers
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- Shaft Mounted Drives
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- Herringbone Gears
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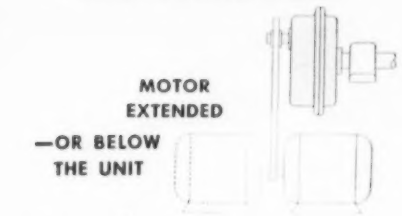
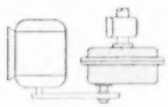
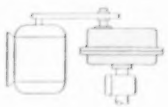
- Steel Castings
- Weldments
- Contract Machining

A FEW OF THE MANY POSSIBLE DRIVING ARRANGEMENTS







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Allis-Chalmers TS-160

7 yd struck

9.5 yd heaped

155 horsepower

5 speeds to 25.4 mph

12-ton payload

Measure these advantages for

22 hp per struck yard—Big Allis-Chalmers supercharged diesel engine delivers extra lugging ability for tough pulls, fast loading. Versatile TS-160 can team up with big equipment or work alone on long- or short-haul construction jobs—handle a wide range of utility jobs, travel at speeds up to 25.4 mph.

Measure these features . . . Allis-Chalmers 516-cu-in. diesel engine—dependable power at all working speeds • Independent, constant live hydraulic power for steering and scraper operation • Low, wide bowl—8-ft, 1½-in. cutting edge . . . 3-piece, interchangeable cutting edges . . . double-acting hydraulic bowl lift jacks • Positive hydraulic ejection, high apron lift to full 7-ft, 1½-in. opening • Roomy operator's compartment, easy-to-reach controls, 24-volt direct electric starting, adjustable bucket-type seat, synchronized 4-wheel air brakes • Big push block for all types of pushers.

a wide range of earth-moving jobs...

Turns non-stop in less than 25 ft with 90-degree hydraulic steering . . . easy maneuverability in narrow cuts, faster cycles without reversing in tight turn-arounds.

Moves quickly from job to job . . . when required, transport wheels are available to meet legal load limits for highway travel.

ALLIS-CHALMERS CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

NEW F-M SCALE HAULS OVER ANY HIGHWAY, SETS UP FAST, SAVES TIME, CUTS COSTS!

Fairbanks-Morse Type Registering Beam delivers punched weigh tickets; features large etched figures on chrome plated face plate, angled 45° for fast, easy reading from natural standing position.

Here is a modern weighing idea that is catching on fast all over the country:

Load this rugged, simple, compact F-M Portable scale on a flat bed truck and haul it over any highway—right to your job site! No pit is required; you can set it on timber or concrete footings on top of the ground if you prefer. To increase length, just place another F-M Scale unit in tandem and connect the weigh beam to both units. Famous Fairbanks-Morse Type "S" parallel link suspension provides extreme accuracy and withstands heavy shocks.

F-M Portable Vehicle Scales are regularly equipped with either full capacity beam or type registering beam, but may be equipped with automatic dial and Printomatic. Standard models are available in 8 sizes from 20′ x 10′ to 60′ x 12′, and in capacities of 20, 30, 40, 50, 65 and 80 tons. Find out now how this streamlined system of on-site weighing can fit profitably into your operations. Write Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois for new Portable Vehicle Scale Bulletin No. ASM520.1A.

EASY TO LOAD, EASY TO HAUL!

Remove platform panels, disconnect transverse lever, tighten hold-down bolts—and standard models (1 and 2) become 8-foot wide units, ready to go anywhere. Wide frame models are simply loaded vertically for over-highway hauling, as in photo 3.

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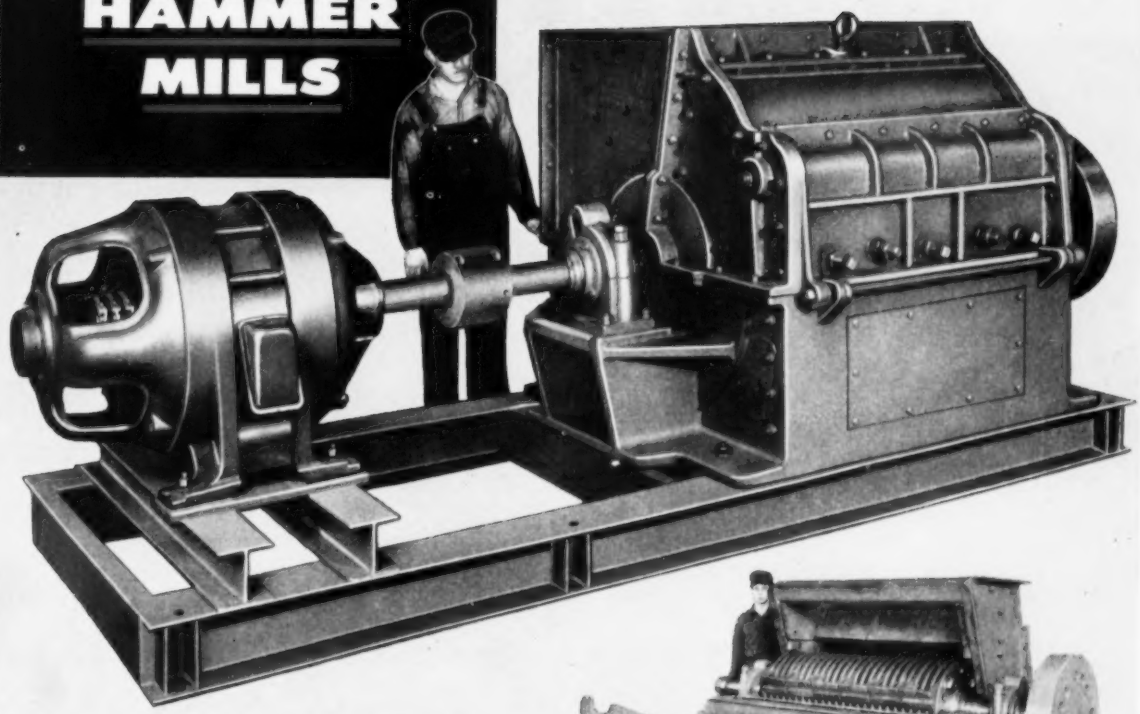
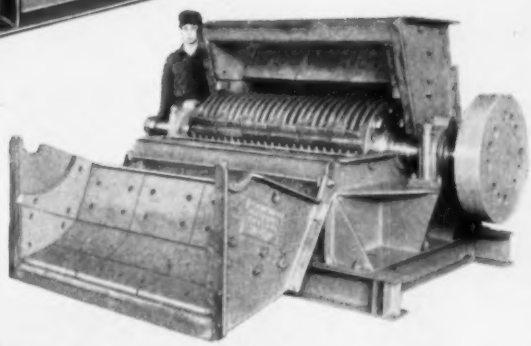
WILLIAMS *heavy duty* HAMMER MILLS





- **Crushes, Grinds, Shreds To Finished Size In One Operation**
- **Reduces Production Costs Up To 50%**
- **Saves Up To 75% On Equipment Cost**

Williams No. 60 GA Mill with heavy duty steel plate frame. Cover has been opened to show heavy duty manganese steel liners, breaker plates, grate bars and hammers.

Whether your size reduction job involves crushing, grinding or shredding—whether the material is mineral, chemical, vegetable or animal—Williams has a hammer mill designed to *do it from start to finish in a single operation.* More uniform product, increased output, plus savings in time and labor can *cut production costs as much as half!*

Extra primary and secondary crushers are seldom required with a Williams—no extra drives or conveyors, no costly foundations or buildings for additional crushers are necessary. Expensive maintenance, replacement parts, excessive downtime and labor are reduced to a minimum.

Learn how a Williams hammer mill can step up your output, and improve your product quality. *Write—explain your operation—and ask for a catalog.*

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Around the pit...around the

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BIG RIGS TIED UP? Ford can fill the odd order in minutes.

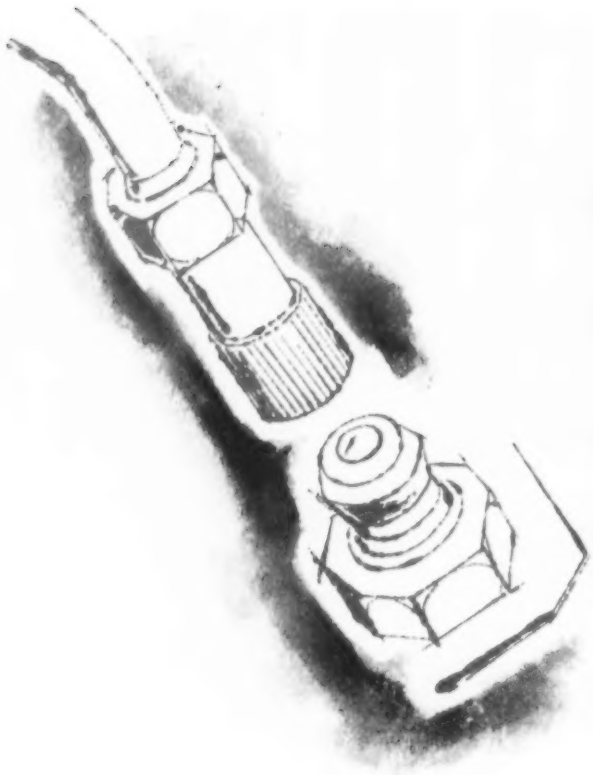
BREAKDOWN? Make repairs on the spot, Ford shuttling the parts.

DIFFICULT "ODD JOB"? Ford can be a *big* help on clean up.

SPRAWLING FACILITIES? You'll appreciate Ford's fast transport.

YOU SEE MORE FORDS BECAUSE THEY SAVE MORE MONEY!

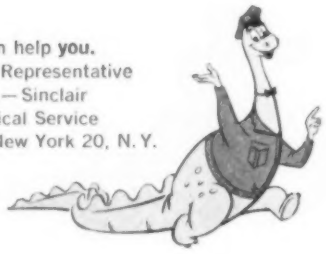
HANDLE ALL THESE JOBS AND MANY MORE . . . AT LESS COST!



Machinery... lubrication... and how to save money

Sinclair Litholine® multi-purpose grease gives many important advantages over ordinary industrial lubricants. For example, it eliminates the need for a variety of single-use greases. Furthermore, it has earned a reputation for water resistance and high temperature performance. Change to Litholine, now. And when management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

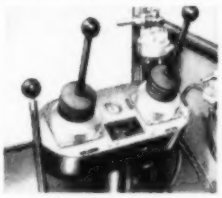
Find out how Litholine can help **you.** Call your nearest Sinclair Representative or write for free literature—Sinclair Refining Company, Technical Service Division, 600 Fifth Ave., New York 20, N.Y. There's no obligation.



SINCLAIR
Litholine®
Multi-Purpose Grease

This Shovel Makes Good Operators Look Better!

The 2½-yd. Lorain-85A Shovel has two vitally important features—available on no other make of shovel—that will send any operator's production figures soaring, with less effort, less fatigue, easier, smoother. They are:



"JOY-STICK" AIR CONTROLS

These 2 levers, through metering valves that retain the old-time normal "feel" of the machine, control all turntable operations through air power. There are fewer levers—fewer motions. Just think what this ease and simplicity of operation means in increased production. Full "Air-Ease" Power Control of crawler travel, steering and tread-travel lock also are provided.

"SHEAR-BALL" MOUNTING

Like a huge, sealed "ball bearing," this revolutionary turntable mounting eliminates forever all adjustment, maintenance and lubrication problems of old-fashioned center pin and roller designs . . . means still more time-saving on the job, more production. Field tested for more than 7 years, the Lorain "Shear-Ball" is real "reliability" in action.

There are many other Lorain-85A features you'll want to know about. Your nearby Thew-Lorain Distributor can tell them to you. And ask him about the on-the-spot Lorain parts and service facilities that are such an important plus value when you buy Lorain. See him soon.

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LORAIN 85A

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reliability in action

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Yes, making quality wire screens for heavy duty vibrating equipment is more than just a weaving process. To maintain high tonnage output and longer screen life, proper wire thickness and rigid accuracy of openings, the uniformity of weave must be controlled constantly.

Cleveland Wire screen sections are designed for all types of mechanical and electrical vibrating equipment.

Complete bulletin files, describing weaves, are available upon request. For faster sales service call Diamond 1-1832.

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Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Responsibility for Error

An official of a large quarry company asked this unusually interesting and important legal question: "If through an honest error by one of our employees, our corporation submits a bid to supply certain materials, or furnish labor and install the materials, can we cancel our bid if before it is accepted we discover that we would lose considerable money by performing the assumed obligations?"

An official of another corporation wrote: "If two contracting parties sign a written construction or installation contract, can one of the parties avoid the responsibilities he assumed under the contract by proving that he was in error when he signed the contract; or that he did not know its contents; or that he was mistaken as to his obligations; or that he did not realize the meaning of the contract?"

A few weeks ago a higher court rendered an important decision involving errors in bids.

In *Lemoge Company v. County of San Mateo,* 297 Pac. (2d) 638, the testimony showed facts, as follows: Officials of a county asked certain contractors to submit bids for work to be done on a new hospital the county officials intended to construct. The bid of the Lemoge Company was accepted. When this company learned that the bids of other contractors ranged from $197,500 to $222,700, or several thousand dollars above its bid, the company's officials at once realized that some mistake had been made in the preparation of its bid. Prompt investigation revealed that in its work sheets the actual cost of certain materials amounting to $10,-452 had inadvertently been listed by a clerk at $104.52. When this mistake was discovered the company notified the county officials and furnished them with the work sheets and adding machine tapes showing the error. Nevertheless, the county officials refused to release the company from its obligations, and accepted the bid. The company proceeded to install the work and then sued the county to recover an additional $11,744.39. The higher court refused to hold the county liable, saying:

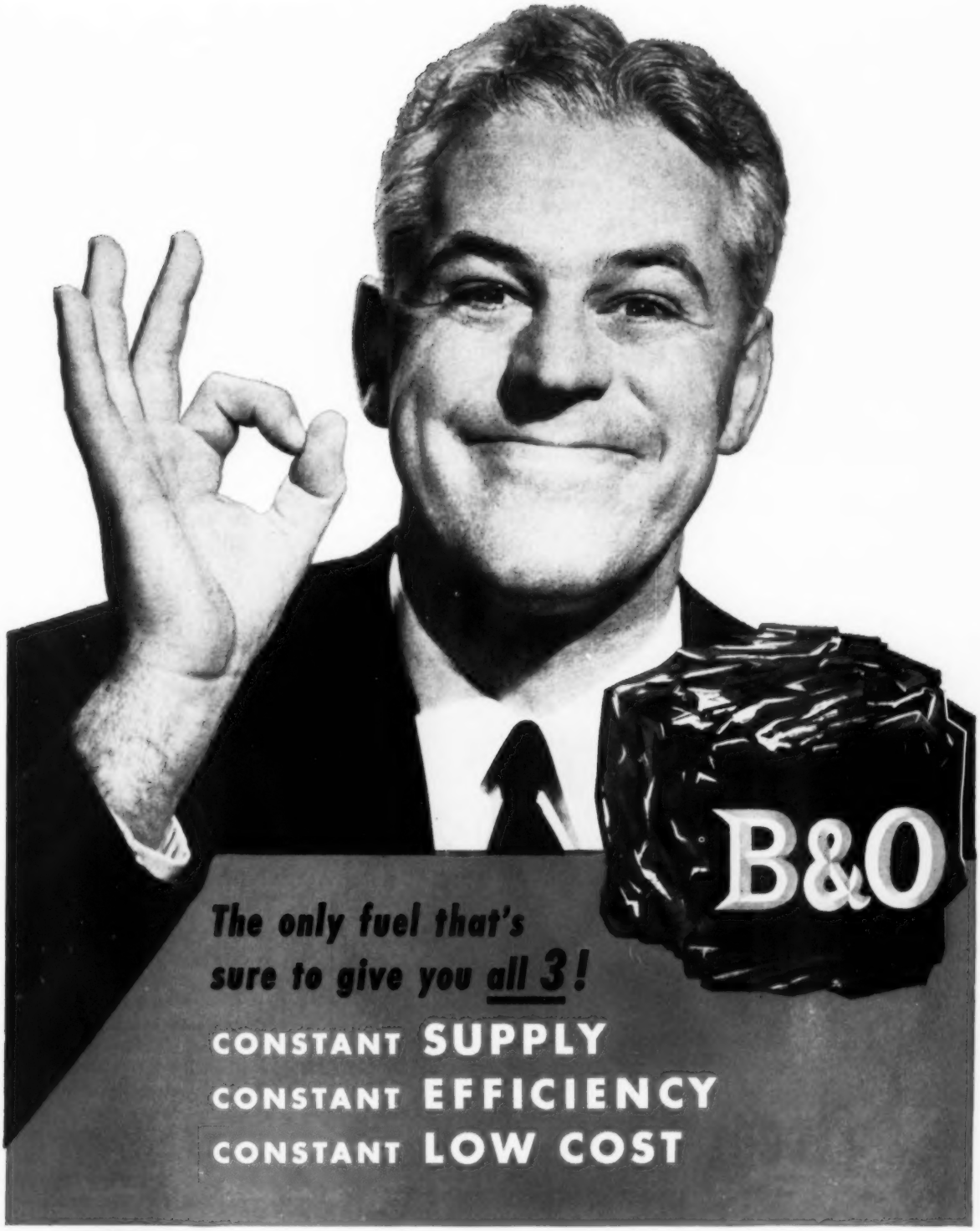
"The Lemoge Company (contractor) cannot now compel defendant (County) to pay the amount which it claims it intended to bid. Such a result would not only be contrary to settled legal principles, but it would also create uncertainty and confusion in the field of competitive bidding."

For comparison, see the leading case of *Outcault Co. v. Hooten & Co.,* 66 So. 901. In this case the controversy involved a contractor's agreement which contained technical terms not clearly understood by the property owner. Later the property owner attempted to avoid liability on the contract on the contention that he did not understand his obligations when he signed it, and further that if he had understood the meaning of certain technical terms in the contract, he would not have signed it.

It is interesting to observe that the higher court held the property owner fully bound by the terms of the contract, and said:

"When two parties enter into a written agreement specifying the terms of their contract, they are mutually bound by these terms as expressed in the written contract as construed by the court, although the understanding of one as to the effect of these terms may differ from the understanding of the other. The mistake of itself, without more, is no defense to an action as law on the contract."

Also, the Supreme Court of the United States in the case of *Upton v. Tribilcock,* 91, U. S. 45, held that a party to an unambiguous contract cannot avoid responsibility al-



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though he did not read it. This court said:

"It will not do for a man to enter into a contract and, when called upon to respond to its obligations, to say that he did not read it when he signed it, or did not know what it contained. If this were permitted, contracts would not be worth the paper on which they are written."

Of course, the party who desires to escape liability under a contract may do so by proving that the other party to the contract acted fraudulently. For example, in a leading case the testimony showed that a property owner did not have his eyeglasses and the contractor read the contract to him.

Later the higher court held that the property owner could cancel the contract because he proved that the contractor did not read to him all clauses in the contract.

Also, the higher courts consistently hold that either or both parties to a contract may cancel it upon proof that they were mutually in error. In one case a contractor and a seller of sand and gravel signed a written contract by the terms of which the seller agreed to supply sand and gravel to the contractor at $1 for each 10-ton load. In a later suit the testimony proved that the contractor intended to buy and the seller intended to sell 10-ton loads for $10 each. The higher court promptly held that the contract was automatically void and of no legal effect. In other words, the contract was canceled as to both the contractor and the seller.

Contradictory Testimony

Recently an official of a company asked: "If there is no written contract between a sub-contractor and a general contractor, or between a contractor and a seller of materials, and a dispute arises over the amount due, how will the court decide the case?"

The answer is: A jury will be allowed to listen to all testimony and decide whose testimony is truthful. Usually the higher court will approve the jury's decision.

For illustration, in *Frank C. Clemens Company v. Huber Construction Company*, 136 N. E. (2d) 382, considerable testimony was necessary in order to bring out detailed facts in a case where a sub-contractor sued a general contractor. The sub-contractor alleged that he had made an oral contract whereby he agreed to furnish and install certain work in several houses to be constructed by the general contractor. The sub-contractor further alleged that when the oral contract was made a unit price of $788 had been agreed upon but that before he started work he had notified the general contractor that he would not start the work until the general contractor agreed to pay in addition to the base unit prices of $788, the actual net increased cost of material. He testified that the general contractor had agreed to pay this extra amount. The sub-contractor contended that the net increased cost of materials amounted to $85.96 per unit, or a total of $7,306.60. For this amount the sub-contractor sued the general contractor. During the trial the general contractor denied that he had orally agreed to pay the sub-contractor an additional $85.96 per unit.

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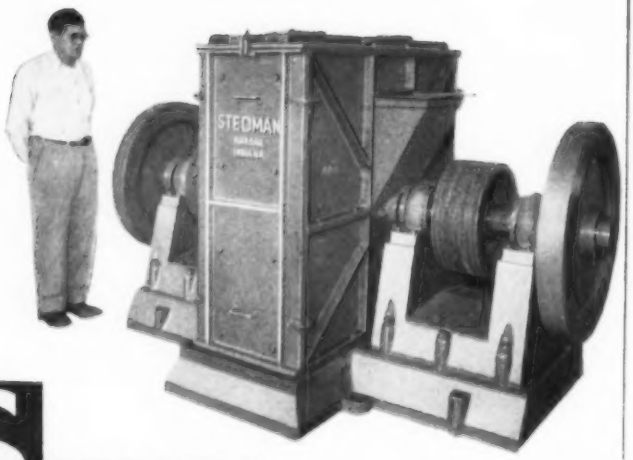

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MORE THAN A CENTURY OF KNOW-HOW

STEDMAN FOUNDRY AND MACHINE COMPANY, INC.

Subsidiary of United Engineering and Foundry Company

AURORA, INDIANA — Founded 1834

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"JOB-TAILORED ESCO DRAGLINE BUCKETS SOLVED OUR DOWNTIME, MAINTENANCE PROBLEMS"

...reports Howard Harrison, mechanical supt., C. A. Pitts General Contractor Ltd., Toronto.

"The material in which we are working," explains Howard Harrison, mechanical superintendent on a St. Lawrence Seaway job involving the removal of 16-million yards of glacial till, "is an extremely hard mixture of clay, gravel and boulders." "Our original buckets broke down frequently in this unexpectedly tough going. Maintenance was costing us more than $100 per week per bucket. Then we checked with our *ESCO* representative, who sent *ESCO* bucket specialists to look into our problem. They recommended the use of two 6-yard *ESCO* HDH Triple Tapered buckets, custom-engineered to our requirements. The *ESCO* buckets immediately reduced our maintenance costs, and we were able to work the two draglines with only one spare bucket for each instead of two previously required."

ESCO bucket specialists can furnish dragline buckets tailored to your specific requirements. See your *ESCO* dealer for details, or write direct.

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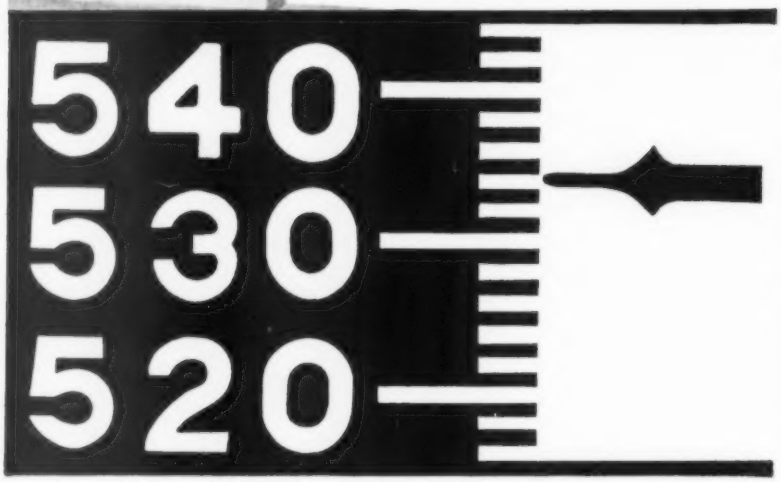

NO MORE "SCALE SQUINT!"

Pin up this ad and look at it from across the room—see how easy it is to read the weight! You can attach a Howe Weightograph to any beam scale, from small bench scales to the largest truck and railroad scales; different models available for different capacities. Standard models plug into ordinary electric outlet. So much easier, faster, more accurate, it quickly pays for itself. Use indoors or out . . . adjusts to eye level . . . parallax errors are completely eliminated.

Send for this detailed booklet and local representative's name—see the Weightograph demonstrated!

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THE HOWE SCALE COMPANY • RUTLAND, VERMONT

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

ELECTRICAL DIVISION • ENTOLETER DIVISION
LIGHTING DIVISION • AUTOMATIC TIMING & CONTROLS

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The jury listened to all testimony and decided that the contentions and statements of the sub-contractor were truthful and held the general contractor liable for extra payment of $7,306.60 The higher court approved this verdict, and said:

"There was a definite conflict in the evidence which presented a jury question. The evidence shows that the increased cost of material could not be determined until the work was done. The evidence presented by the plaintiff (sub-contractor) was to the effect that defendant (general contractor) told plaintiff to proceed to order the material and get the work done and later present figures with respect to cost. This issue was submitted to the jury under proper instructions."

Mixing Plant Incidental to Quarry

A few weeks ago a higher court rendered an important decision which clearly answers a common question, as follows: "Can a quarry operator construct and use new equipment, machinery and mixing plants after the area has been zoned for residential purposes only?"

In *Stilliman v. Falls City Stone Company,* 305 S. W. (2d) 322, the testimony showed facts, as follows: The Falls City Stone Company had for some time been operating a quarry on a 142-acre tract when it was placed in a residential district by a new zoning ordinance. A short time later, a suit was filed by owners of nearby homes. The court decided that the new zoning ordinance did not affect continued operations of the quarry. This court held that the stone company could continue to operate a commercial rock quarry and to do all things incidental to the usage, including the use of power-driven equipment, of blasting materials, and the use of such other equipment as is incidental and customary in the operation of a rock quarry. Hence, the Falls City Stone Company was permitted to continue its usual operations.

Sometime later the Falls City Stone Company erected facilities at the rock quarry for mixing crushed stone with cement and asphalt respectively. It expended $400,000 on these improvements.

Another suit was filed by property and dwelling owners and the court was asked to enjoin and prohibit the stone company from operating its new plant on the contention that these new operations were illegal.

The lower court held that the stone company could lawfully use its new equipment and mixing plants. The higher court promptly approved this verdict and said:

"It is definite that the property owner (Falls City Stone Company) had the right to use such other equipment as is incidental and customary in the operation of a rock quarry . . . . It was competent for the lower court to receive evidence as to whether the mixing plants came within the scope of the judgment."

Another incidental point of law involved in this case was the fact that instead of filing the suit at the time the stone company started making the new improvements, the suit was not filed until after the new machinery and equipment was installed. In this respect, the higher court said:

"If the appellants, neighboring property owners, regarded the development as not within the scope of the judgment, it was their duty to take affirmative action and not to stand by and let the large expenditures be made without asserting their claimed legal right. We think the conclusion of the lower court on this point is also correct."

Driver v. Occupant

It is well known law that if the driver of a motor vehicle sustains an injury as a result of his own negligence, he cannot recover damages for the injury. Now a new higher court decision has indicated that this same rule of law is applicable to an injured occupant in an automobile who is accustomed to keep a "lookout" for the driver.

In *Kelling v Howard Construction Company,* 81 N. W. (2d) 85, it was shown that a woman occupant of an automobile was seriously injured when the driver collided with a dirt embankment thrown up by a contractor across the road while excavating a ditch.

In subsequent litigation the higher court indicated that the contractor would not be liable in dam-

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They're "The Weldor's Rods"

Rated "easiest to use" by a wide margin . . . exceptionally smooth running, with rapid deposition rates . . . no slag to remove from deposits or guess through to determine gauge . . . are easily struck . . . very little splatter . . . over 80% recovery rate.

They're "Job-Graded"

There's a Ranite rod that's exactly right for any hardsurfacing job — regardless of whether the wear condition is caused by shattering impact, severe abrasion, or some combination of impact and abrasion.

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The colors are keyed to the exclusive Ranite Select-O-Graph Guide so you can pick the right rod for any job with no guesswork.

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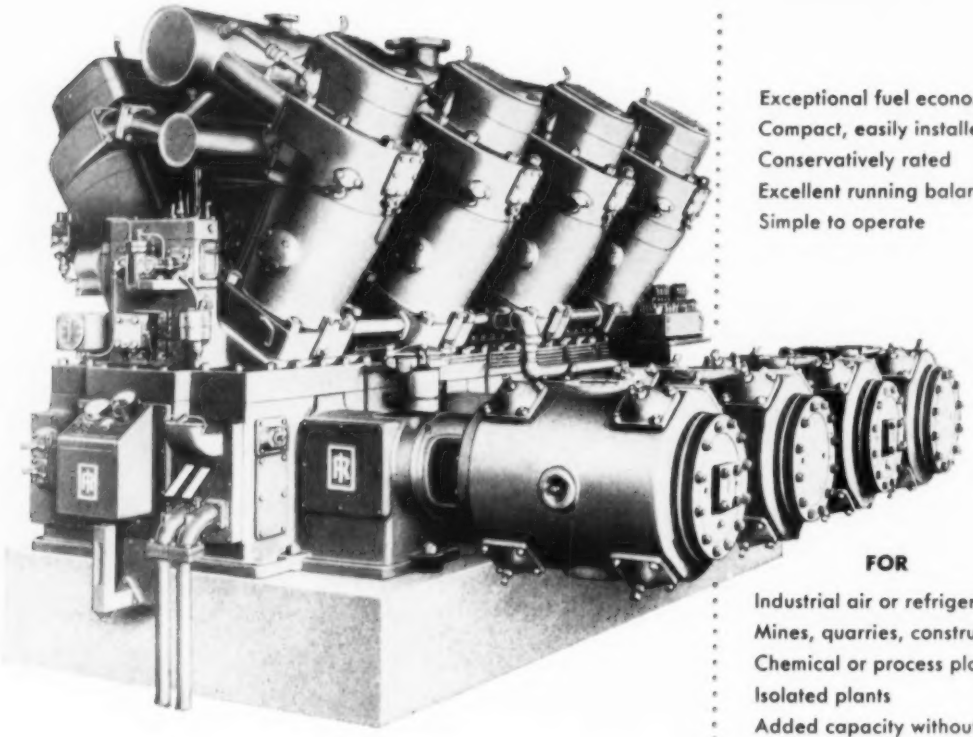
Ingersoll-Rand announces the SVO diesel-engine compressor



Exceptional fuel economy
Compact, easily installed
Conservatively rated
Excellent running balance
Simple to operate

FOR

Industrial air or refrigeration
Mines, quarries, construction
Chemical or process plants
Isolated plants
Added capacity without power demand

Integrally-built diesel-engine compressor provides unmatched operating economies!

The SVO is not an engine coupled to a compressor through power-wasting, space-consuming gears, but is an integral unit which combines a sturdy, low-speed, 4-cycle V-angle diesel engine with an efficient double-acting compressor on a single rugged frame with common crankshaft. It is the successor to Ingersoll-Rand's highly-successful XVO, which gained an unequalled reputation for dependability and economy in many years of service on numerous jobs.

The SVO is designed for continuous full-load compressor service at low cost. It is built in five sizes with 4, 6, 8, 10 or 12 power cylinders, for capacities from 1065 to 3200 cfm (at 100 psi). It can be furnished with compressor cylinders to handle air or gas at various pressures or vacuums. This machine will provide additional compressor capacity where electrical or steam generation facilities are already loaded or nonexistent, and is ideal for independent or isolated plants.

For full details, contact your local Ingersoll-Rand representative or write direct.

Only I-R compressors have CHANNEL VALVES
Known for high efficiency, quiet operation and exceptional durability. Entirely different. Each valve is a combination of rigid stainless-steel channels and leaf springs, with trapped-air spaces which cushion action, prevent impact.

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6-597
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4-CYCLE

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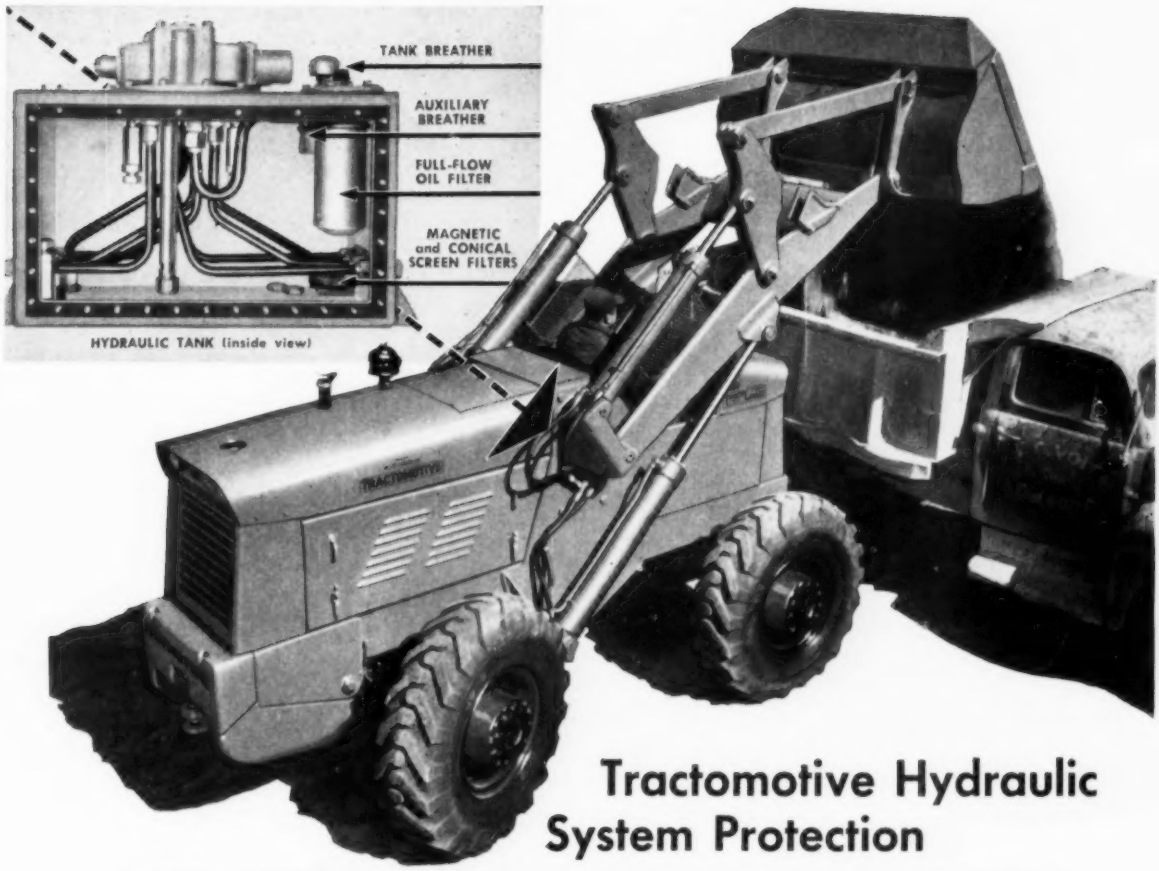

Tractomotive Hydraulic System Protection

CUTS DOWNTIME

Another exclusive feature on this Big TL-20 TRACTOLOADER! Another example of Tractomotive Common Sense Design!

Trouble is kept *out* of the TL-20 hydraulic system. Air is double-filtered — by an outside and an inside filter. All hydraulic oil is thoroughly and constantly cleaned by a full-flow oil filter. Metallic and other particles are caught by a magnetic filter and a conical screen filter. What other hydraulic system gives you such *complete protection?* And what a difference this makes in loader performance . . . in loader upkeep . . . in less downtime, more working time.

Here is another TL-20 exclusive . . . another Tractomotive design difference that means a profit difference!

There is a fast-working TRACTOLOADER to fit every job — 15 cu ft to 2 cu yd . . . 2 and 4-wheel drive.

TRACTO — *a sure sign of modern design*

SOLD AND SERVICED BY YOUR ALLIS-CHALMERS CONSTRUCTION MACHINERY DEALER

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ages for the injury if the testimony proved that the injured occupant had in the past helped the driver in looking ahead to see that the road was safe.

Purchaser Cannot Rescind Contract

A reader asked this question: "If a seller guarantees machinery, under what circumstances can the purchaser rescind the contract and recover from the seller the full amount of money paid?"

The answer is: If the purchaser fully complied with the sale contract and the seller's guarantee was breached, the purchaser can at once return the machinery to the seller and recover the full contract price. However, if the purchaser does not immediately return the defective machinery to the seller, or used it for a different purpose than was stated in the contract, the purchaser cannot rescind the contract.

In *Mueller Company v. Keeley*, 85 N. W. (2d) 309, the testimony showed facts, as follows: The Mueller Company sold to one Keeley, operator of a gravel pit, a tractor equipped with a gravel loader. The contract provided that the seller would installed on the tractor a hydraulic loader equipped with a bucket of at least ⅞-cu. yd. capacity and make such other modifications, changes, and repairs as Keeley deemed necessary. The contract also provided that if the equipment failed to perform satisfactorily the seller would refund to Keeley the full purchase price.

In a later suit Keeley alleged that the machinery failed to perform satisfactorily as follows: (1) The shaft that drives the hydraulic pump broke; (2) one of the hydraulic hoses swelled and had to be replaced and another of the hoses leaked; (3) the gears of the tractor were hard to shift and would grind while shifting; and (4) three stud bolts twisted off and two stud bolts stripped off the chain casings.

During the trial testimony was given that Keeley failed to deliver the machinery back to the seller but continued to use it. Also, the testimony showed that Keeley used the machinery to excavate gravel in a dry gravel pit. Whereas the customary operation for a four-wheel tractor and loader in the gravel business was for loading stock-piled material, either dirt or gravel and not for excavation or to dig material not broken loose.

In view of the testimony the lower court held that Keeley must keep the machinery and pay the Mueller Company the full agreed contract price. The higher court agreed and said:

"In the light of the evidence, the lower court could find, as it did, that any breakage or wear to the loader was occasioned by excessive, abusive, and strenuous use beyond that use for which the machine was warranted. It is apparent from the evidence that it was not warranted for excavation of gravel in dry gravel pits . . . . As to the stud bolts in the chain cases coming loose and some of them being twisted or sheared off, the evidence shows that such bolts must be kept tight like any other bolts, and if they become loose they will eventually shear off . . . . The plaintiffs at all times have exercised dominion over the equipment and continued to use it for his own purpose after

MANITOWOC AGITATORS

improve quality ...reduce costs

- Combine air and mechanical agitation
- Prevent Air Pipes from clogging
- Reduce "Step-Bearing" Wear
- Produce Perfectly uniform slurry
- Simple, Fast Acting Control Valve

You will find the modern Manitowoc Slurry Agitators the real answer to your agitating and blending problems, because they combine both mechanical and air agitation, to give you uniform, high quality cement at the lowest cost.

The Manitowoc Agitator has been designed to employ air on an intermittent cycle, as economically as possible, and at the same time employs a unique method of piping which prevents the air line from plugging.

The Manitowoc Central Control Valve is a self-contained, fast acting unit complete with air manifold and valve drive and may be very accurately timed to suit any desired operating cycle.

Manitowoc Agitators have many exclusive features and advantages, and can be engineered to meet your exact requirements even for tanks over 100′ in diameter. Write today for full details.

MANITOWOC SHIPBUILDING INC.

Manitowoc, Wisconsin

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"13 Years Without a Single Lubrication Failure!"

Hausz Brothers, Inc. credits Cities Service

When you can operate a crushing plant, redi-mix plant and 14 pieces of mechanized equipment for thirteen years without lubrication failure—mister, you're doing something!

No one knows this better than Hausz Brothers, Inc., of Fort Atkinson, Wisconsin—for that's their record.

"But it's more than just our record," says Carl Hausz. "It's a record belonging to Cities Service, too, for we've used nothing but Cities Service fuels and lubricants during the entire 13 year period.

"Currently, we use Cities Service C-300 and C-500 motor oils, Trojan MP gear oil, and multi-purpose Trojan H-2 grease, as well as Cities Service gasolene and diesel fuel. We couldn't be more satisfied with the results."

As with Hausz Brothers, satisfaction is a characteristic of Cities Service customers. If you're not completely satisfied with your present fuels and lubricants, talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

Neither Sand nor Snow nor rain nor hail stops Cities Service lubricants from doing their job. Close-up of crusher typifies conditions under which they give flawless lubrication.

Often used 9 hours a day, Hausz Brothers' equipment takes terrific work load. One reason is because Cities Service oils and greases take the lubrication load.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Transmit every pound of usable torque with J-M Friction Facings

Woven J-M Cone Facing being applied to a power take-off unit.

Heavy-equipment operators have discovered that Johns-Manville Friction Facings for clutches efficiently control the tremendous torque output of modern engines. These facings can withstand the searing clutch heats (as high as 1200 F) developed during power engagement . . . heats which can destroy friction ingredients and increase clutch slippage.

J-M Friction Facings, made of the finest asbestos fibers and resins, were specifically engineered for their job. They resist thermal breakdown . . . absorb and pass off sudden heat surges. They quickly bring drive shaft and power take-off units to fullest working torque, prevent loss of engine torque that robs your equipment of speed and power, makes your operation less profitable.

See your J-M Distributor or write Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ont. Ask for Brochure FM 35-A.

JOHNS-MANVILLE
100 YEARS OF QUALITY PRODUCTS...1858...1958

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the breakage and defects about which he complains."

Importance of Control

A few weeks ago a higher court held that although a truck driver is being paid wages by the lessee or user of the motor vehicle, yet the driver may remain the lawful employee of the owner of the vehicle.

In *Argonant Exchange v. Industrial Accident Commission,* 316 Pac. (2d) 759, the testimony showed that an owner leased his truck to one Thompson. The latter agreed to pay rent for the use of the equipment, and the owner agreed to maintain the truck. Also, the agreement provided that Thompson would carry the driver, Clayton, on his payroll and pay all wages.

One night Clayton was killed when the truck ran off the road and plunged into a ravine.

In subsequent litigation, the higher court held that the truck owner was liable for payment of compensation to Clayton's widow, because the truck owner had control over Clayton and directed him what to do. Hence, the truck owner was the legal employer, although Thompson had Clayton sign an employment card and paid Clayton weekly wages. The court said:

"When a general employer (truck owner) lends an employee to a special employer, the special employer becomes liable for workmen's compensation only if (a) the employee has made a contract of hire, express or implied, with the special employer; (b) the work being done is essentially that of the special employer; and (c) the special employer has the right to control the details of the work."

Cash Price is Lower

A few weeks ago a higher court held that it is legal for a seller to have a "low" price on an appliance or machinery to be sold for cash.

In *David P. Sledge v. John L. Murphy,* 284 S. W. (2d) 938, the higher court held that a dealer is fully within his legal rights to have two different selling prices on the same appliance, merchandise or machinery, one price for cash and another price for credit. This higher court also held that where interest rates are based on a credit price,

the buyer cannot complain that he was charged usurious interest rates on the basis of the cash price.

This court held that there is no law against dealers having a low cash price and a higher credit price on the same merchandise.

Property Owner Pays Materialman

A few weeks ago a higher court rendered an important decision to the effect that if a property owner voluntarily pays a general contractor a debt owed by a subcontractor, the payment is permanent and the money thus paid cannot be recovered from the subcontractor by common creditors if the latter becomes insolvent or a bankrupt.

For example, in *Spokane v. Tacoma Supply Company*, 317 Pac. (2d) 917, the testimony showed that one Weisgerber was the general contractor for the installation of materials in a certain building. The Tacoma Supply Company furnished the materials on that job. The general contractor fell in arrears in payments for the materials, arranged with the property owner to have one of his payments for the job made by a check payable jointly to the general contractor and the Tacoma Supply Company. The check, in the amount of $13,254.87, was delivered by the property owner. The general contractor endorsed it, and the Tacoma Supply Company cashed it and, thereby received its payment for the materials furnished to the property owner.

Less than a month later the general contractor became insolvent and made an assignment of all his assets for the benefit of common creditors.

The assignee of the general contractor, for the benefit of common creditors, filed suit to collect from the Tacoma Supply Company the sum of $13,254.87.

The higher court held that Tacoma Supply Company could keep the $13,254.87 paid by the general contractor and the property owner

---

Bestwall Gypsum Company has begun construction of a $7,500,000 plant in Brunswick, Ga. The Brunswick project will mark the start of a multimillion-dollar expansion program on the Atlantic coast.

BIGGER PAY LOADS

with aluminum OWEN buckets

The combination of alloy aluminum plate with steel in the bowl construction of material handling buckets . . . 2½ cubic yards and over, eliminates up to 1000 pounds of dead weight. This affords a like amount of increase in pay load when rehandling comparatively light, free-flowing materials.

The exclusive feature of the closing line lead in the center plane of the bucket eliminates sharp bends at the guide sheaves and rollers, thereby increasing the life of the closing cable from 75% to 100%.

Long, internal main-shaft bearings insure permanent jaw alignment with minimum wear. Write for further details.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
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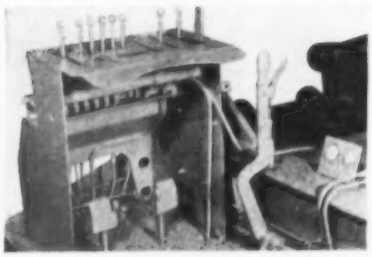
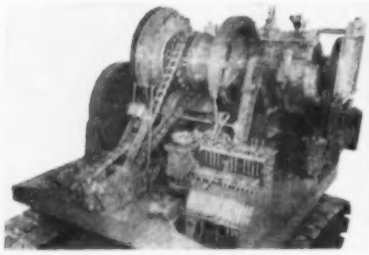
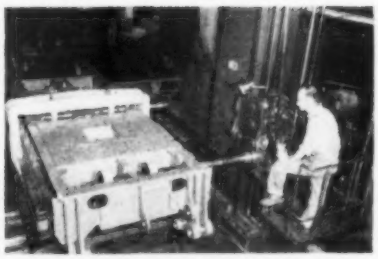
Six reasons why Link-Belt Speeder . . .



1. **SPLIT-SECOND FINGERTIP CONTROL** — Exclusive Speed-o-Matic power hydraulic controls put a K model through its paces at a flick of an operator's wrist . . . minimize fatigue . . . encourage high production throughout the shift.



2. **BONUS USABLE HORSEPOWER** — The extra strength built into load-carrying components permits K models to take full advantage of the engine's available horsepower and still remain well within engine manufacturers' recommended speeds.



3. **PRECISION ALIGNMENT TO CUT MAINTENANCE** — Close-tolerance machining, including jig line boring (above), means closer fits . . . less chance for eventual misalignment . . . no need for shims . . . better parts interchangeability.

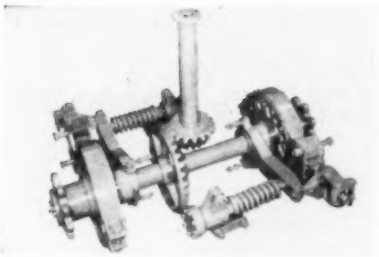
King-size K models

Here's how the 1¾-yard K-370 Series is tailored to today's economy . . . why it's a better buy than any 1½-yard shovel-crane . . . more practical to use than many 2-yard rigs

In comparison with 1½-yard machines, the 1¾-yard K-370 offers much more than just a 16% advantage in bucket capacity. It's fast, easier handling . . . exceptionally maneuverable and easy to transport. It boasts the top usable horsepower in its class . . . even outrates some 2-yard rigs.

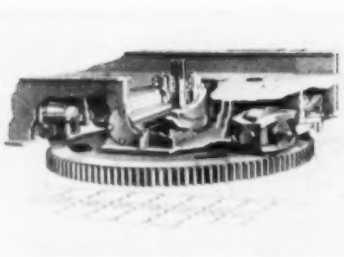
For the complete story, see your distributor or write for the new 20-page catalog, No. 2727.

LINK-BELT SPEEDER CORP., CEDAR RAPIDS, IA.



4. EXCEPTIONAL ON-THE-JOB MANEUVERABILITY—Traction mechanism features hydraulic power steer. This, plus high speed power shifting, makes K models great for work in tight quarters. No time wasted to manually engage jaw clutches.

5. EASY JOB-TO-JOB TRANSPORTABILITY—Any K model can be readied for lowboy or rail car transport in short order. Crawler side frames, counterweight and attachments can be removed to meet weight or width restrictions.



6. NO BINDING STRESSES ON CENTERPIN OR ROLLERS—Exclusive centerpin trunnion and oscillating conical roller design eliminates concentrated centerpin loadings . . . prevents shearing or bending . . . minimizes wear.

deliver bonus output

And here's why the 3-yard K-608 series outmaneuvers smaller rigs . . . often outproduces bigger machines

The K-608 has created real excitement wherever it has been used. It's so fast, so easy to handle, so powerful!

And no wonder—with Speed-o-Matic controls, power shift, power steer and many other features, the K-608 wheels through cycles at a speed you'd expect only from smaller rigs. The K-608 features an engine-torque converter and tailshaft output governor combination as standard equipment. The result—ability of engine power to adapt to load requirements . . . no chance for engine stalls.

For all the facts, see your distributor or write for the new 20-page catalog, No. 2710. 14,566

LINK-BELT SPEEDER

It's time to compare . . . with a Link-Belt Speeder

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"THIS LUBRICANT MEETS OUR REQUIREMENTS FOR SUB-ZERO TEMPERATURES"

Says- TUCKER SNO-CAT CORP.

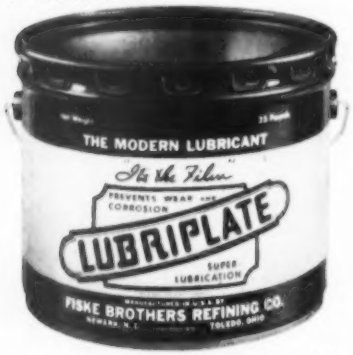
"We are proud to state that there are over 50 SNO-CATS satisfactorily operating in the Antarctic in temperatures as low as minus 60 degrees. This seems to us the ultimate in extreme tests for both SNO-CATS and LUBRIPLATE LOW-TEMP Lubricant on which SNO-CATS depend for their consistently outstanding and reliable performance."

J. M. Tucker, General Manager

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



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Manufacturers' News

Construction Service Equipment Company of Omaha and North Platte, Nebr., has been appointed a distributor in portions of Nebraska and Iowa for The Bucyrus-Erie Company, South Milwaukee, Wis.

Territory of the new distributor includes the state of Nebraska, except the following counties: Sioux, Dawes, Sheridan, Box Butte, Scotts Bluff, Banner, Kimball, Morrell, Cheyenne, Garden, Deuel.

The territory also includes the Iowa counties of Lyon, Sioux, Plymouth, Woodbury, Monona, Harrison, Pottawattamie, Mill, and Fremont.

The appointment of JOHN SHARDA as a district sales representative for the Euclid Division, General Motors Corporation, Cleveland, Ohio, has been announced. His territory comprises the states of Illinois, central and southern Wisconsin, eastern Missouri, central and eastern Iowa, and Lake County in Indiana. He will make his headquarters in the Chicago area.

Before joining Euclid, Mr. Sharda was a district representative and later, manager of sales training for another equipment manufacaurer.

The Automatic Spring Coiling Company, Chicago, Ill., has elected H. RODNEY BOLIN president. Mr. Bolin previously was vice-president and general manager. ROBERT G. LAMBRECHT, formerly assistant general manager, was elected general manager, and HERBERT J. BOLIN continues as board chairman.

John Deere Industrial Division, Moline, Ill., announces completion of a new industrial manufacturing unit in Moline, Ill., designed to produce the working equipment being developed for use with John Deere industrial tractors.

ROBERT B. CURTIS has joined the Republic Rubber Division, Lee Rubber & Tire Corporation, Youngstown, Ohio, as a field representative. Mr. Curtis will headquarter in Peoria, Ill., where he will be responsible for the sales and service of Republic's line of hose, belting, packing, and molded and extruded rubber products to the industrial rubber users in outstate Illinois.

R. B. Curtis

M. E. Jenks

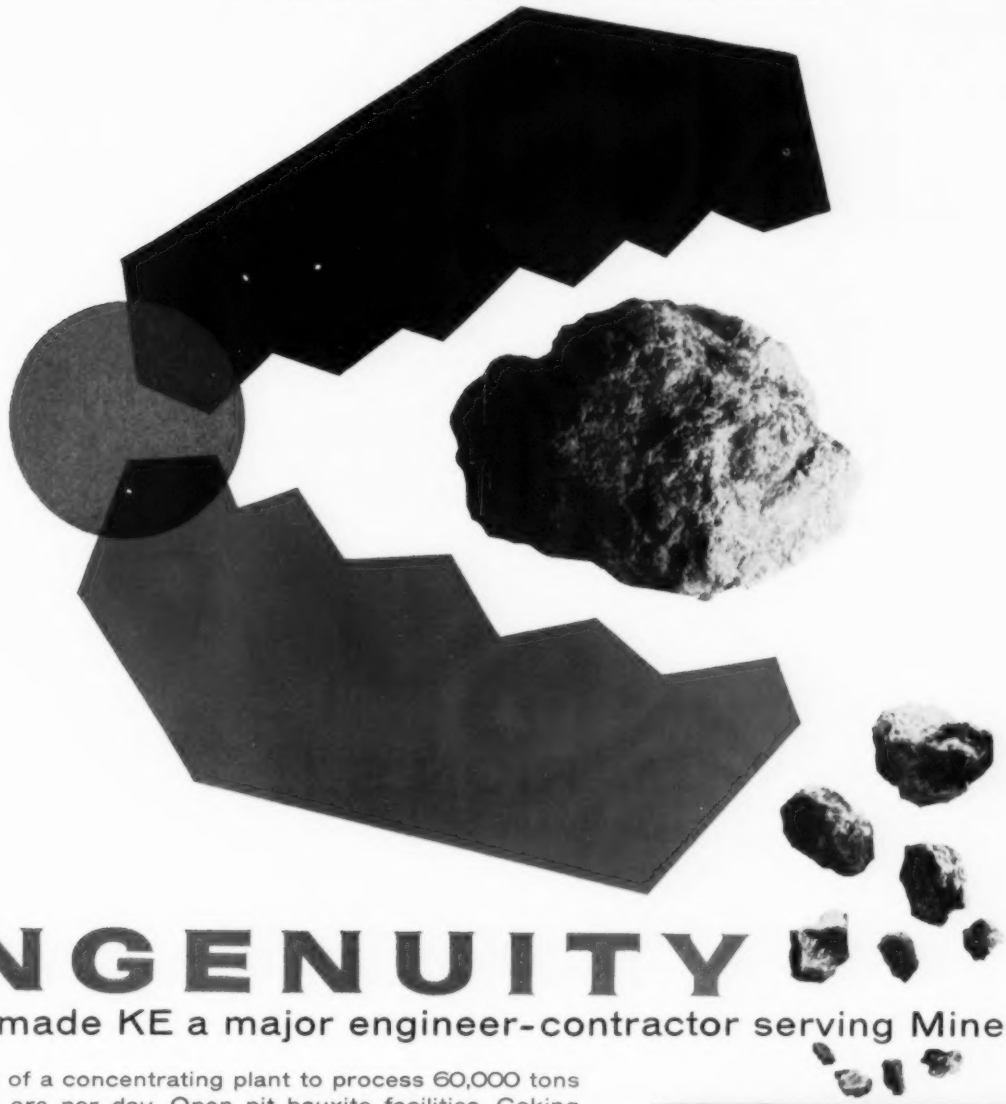
M. E. JENKS has been appointed sales manager of the Ulrich Manufacturing Company, Roanoke, Ill. He will direct field sales work, calling on the Ulrich-Caterpillar dealer organization.

Mr. Jenks has had a long and varied cereer in the heavy equipment industry. He served for many years on the sales staff of the Trackson Company and of the Caterpillar Tractor Company. For the last 11 years he had been associated with Euclid as a district representative.

The H. B. Slaughenhaup Company, Chambersburg, Pa., a dealer in army surplus and vehicles, is now operating under new management as the Allegheny Branch of the Memphis Equipment Company, Memphis, Tenn. Charles E. Bailey is Allegheny Branch manager.

The branch will stock a complete line of army all-wheel-drive vehicles, including the GMC 2½ ton 6x6, International ½ ton 6x6, and the Autocar 4 ton 4x4 army trucks.

call KE for plant expansion or new facilities



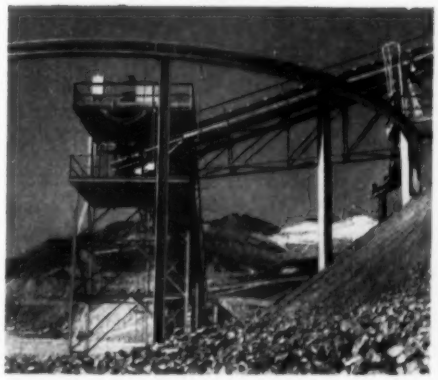
INGENUITY

has made KE a major engineer-contractor serving Minerals

Design of a concentrating plant to process 60,000 tons of iron ore per day. Open pit bauxite facilities. Coking coal processing plants. Diatomite plants. Cement plants. These are a few of many projects and studies Kaiser Engineers undertakes for the Minerals industries in the United States and world-wide—Quebec, Jamaica, Mexico, Brazil, Australia, New Zealand, Greece, Turkey, India.

From determination of process through design and construction of complete facilities, KE can perform any or all steps. And perform them with Ingenuity—to produce a more efficient operation, in less time, at lower cost.

For your next facility—whether ferrous, non-ferrous or non-metallic—call KE.



Pendulum ore conveyor—Ingenuity produced KE innovation distributing beneficiated iron ore in 180° crescent: conserved space, cut rehandling costs.

KAISER ENGINEERS

KAISER ENGINEERS engineers-contractors
Contracting since 1914

Division of Henry J. Kaiser Company · Oakland 12, California · New York, Pittsburgh, Washington, D. C., Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

4630

Owner Gets 20% PAYLOAD BONUS From His MARION!

MFR, 8 to 10 cubic yard body, one-inch oak liner with 3/16" wear plate and three-quarter size cab protector; HD-10S hoist.

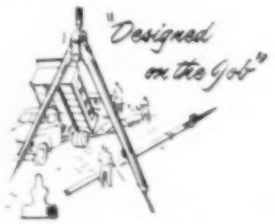
FAST OPERATION OF MARION'S HD-10S HOIST HELPS MAKE POSSIBLE EXTRA PAYLOAD TRIPS DAILY

A contract hauler working on the 300-mile Connecticut Thru-Way is realizing extra payload trips daily with his Marion hoist and body. Playing an important part in these daily bonus payloads is Marion's fast operating hoist.

The Marion unit has been on the job every working day for 6 months, hauling blue diamond sand and stone over a rough 10 miles of road. So far, it has outperformed all other units of the same size but of different make in his truck fleet.

In fact, the performance of the Marion has been so outstanding that the contract hauler has placed an order for two more Marion units with HD-10S hoists and MFR 7 to 10 cubic yard extra heavy duty contractor's bodies.

Next time you're shopping for a hoist and dump body that must do a tough job fast and well, check your Marion distributor.



MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO.
MARION, OHIO, U.S.A.

Enter 164 on card, page 105

D. J. Drinkwater

The Mine and Smelter Supply Company, Denver, Colo., has joined forces with its subsidiary company, the Colorado Iron Works, and all products of both companies will be manufactured by the parent company. Consolidation of the sales, engineering, and production departments of the two companies will result in a completely integrated organization to provide improved service to all industries.

Donald J. Drinkwater, formerly assistant manager of the company's Marcy Mill Division, is manager of the new Manufacturing Division.

Appointment of six new distributors for aggregate producing equipment manufactured by the Western Machinery Company, San Francisco, Calif., has been announced.

E. F. Marsh Engineering Company, St. Louis, Mo., is distributor in eastern Missouri and southern Illinois. The Lower Peninsula of Michigan will be served by Eddy & Company, Lansing, Mich. Smith-Booth-Usher Company, Los Angeles, Calif., will distribute WEMCO's line of equipment for the mineral aggregate industry in southern California and Clark County, Nev.

WEMCO products will be distributed in Indiana by Korte Brothers, Inc., Fort Wayne, Ind. Lyons Machinery Company, Little Rock, Ark., will cover the state of Arkansas. The Washington Machinery Co., Seattle, Wash., is distributor in northwestern Washington.

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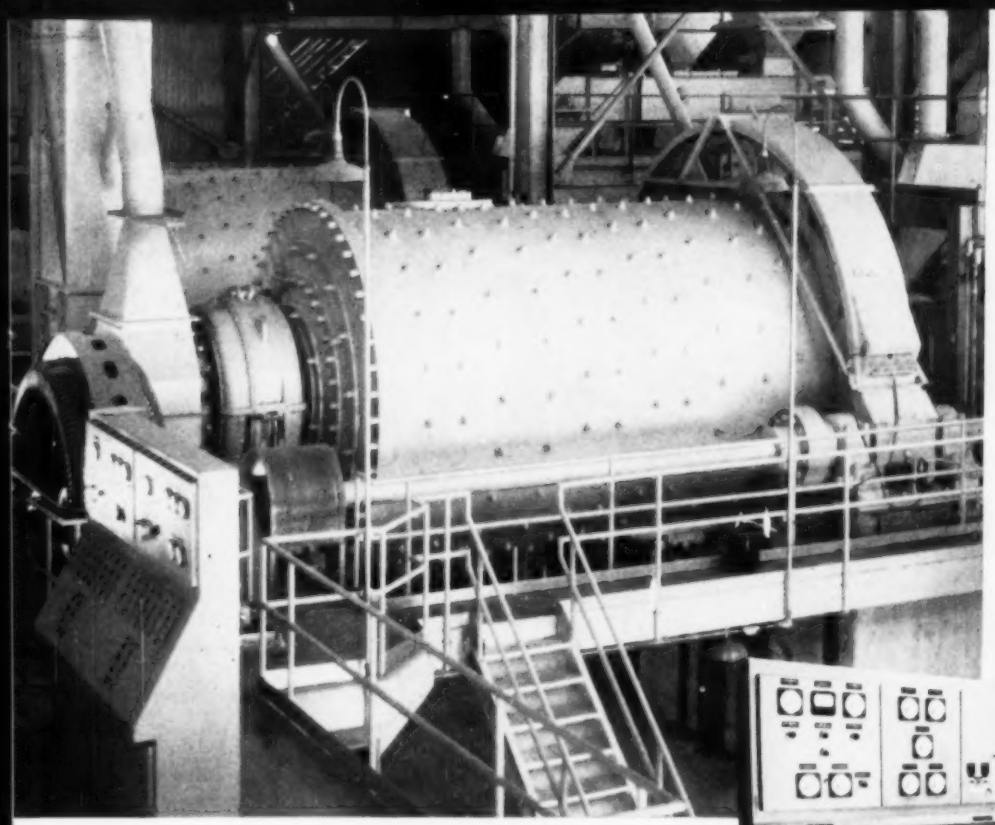
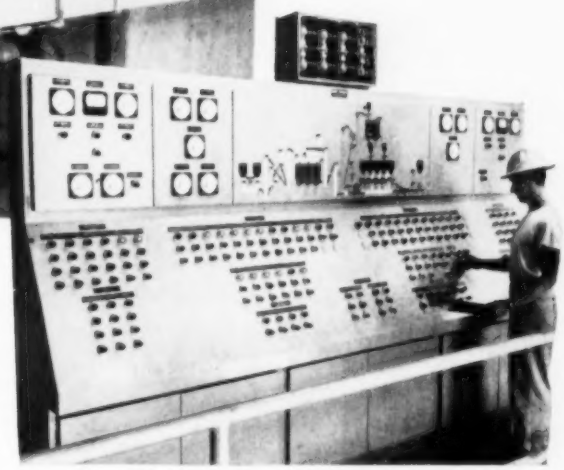


Left: Two of five 11′ x 17′ Nordberg Grinding Mills installed for dry process service at a new cement plant.

Below: Close-up view showing modern, functional Nordberg grinding mill control console, with interlocking relays for sequence starting of all equipment. Note flow diagram with indicator lights at center of top panel.



3 reasons why it pays to specify NORDBERG GRINDING MILLS

1 **Advanced Engineering** Nordberg mill design reflects significant technological improvements that may measurably affect your installation and operating costs. Sealed trunnion bearings; positive bearing lubrication; optimum life of wearing parts are among the features that will benefit you.

2 **Quality Manufacture** Nordberg Mills are (1) precision built to rigid specifications in shops renowned for (2) skilled manufacturing personnel, and (3) modern machine tools and equipment to assure quality workmanship. Good reason why the name NORDBERG has always signified the *ultimate* in mining, quarrying and process machinery.

3 **Dependable Operation** A team of experienced application engineers with a sound understanding of your milling operations qualifies Nordberg to serve you. More important, it assures you of the right machinery for the job . . . machinery that must be dependable and will continually produce to your specifications.

Nordberg Grinding Mills are built to meet specified conditions for wet or dry grinding—in the manufacture of cement; the fine reduction of metallic and non-metallic minerals; and in numerous other processes where friable material must be comminuted to fine sizes at low cost per ton. They are available with grate, overflow or peripheral discharge . . . and are built in sizes from 6 feet to 13 feet in diameter and up to 50 feet in length.

Write for a copy of Bulletin 232, which describes the complete line of Nordberg Grinding Mills.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

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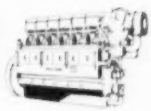
NORDBERG

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY
MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS • SAN FRANCISCO
TAMPA • WASHINGTON • TORONTO • VANCOUVER • GENEVA
JOHANNESBURG • LONDON • MEXICO, D.F.

SYMONS® CONE CRUSHERS

SYMONS VIBRATING GRIZZLIES and SCREENS

ROTARY KILNS and COOLERS



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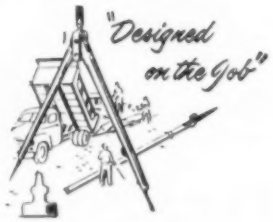

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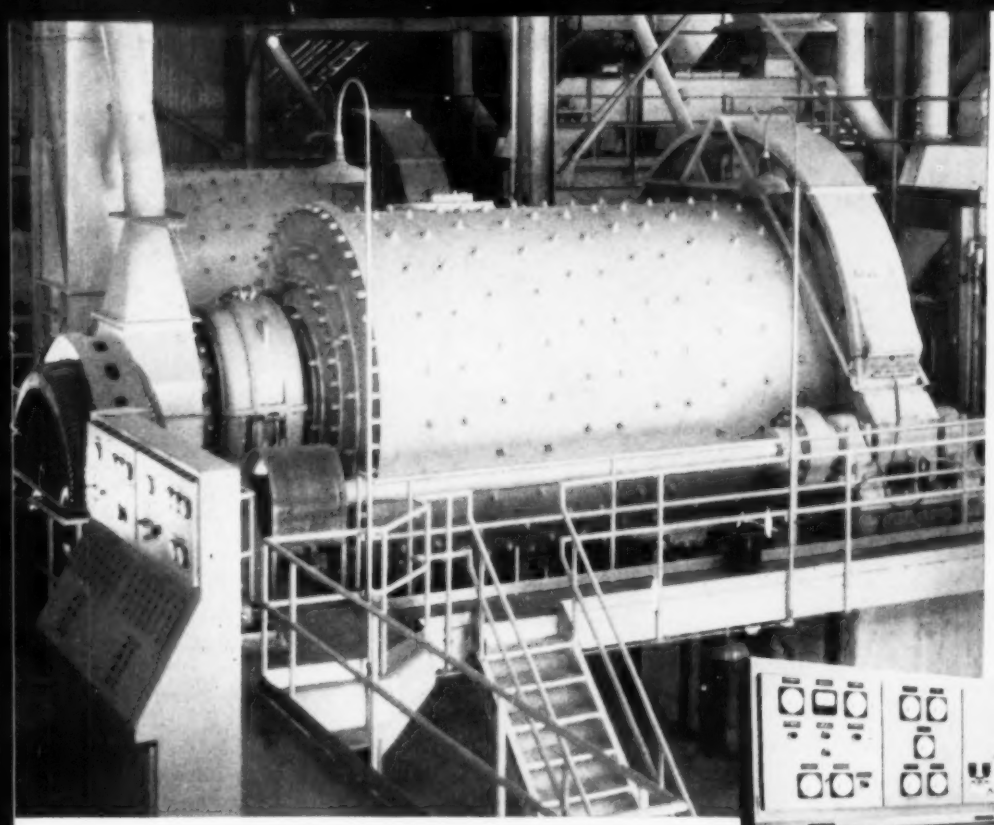

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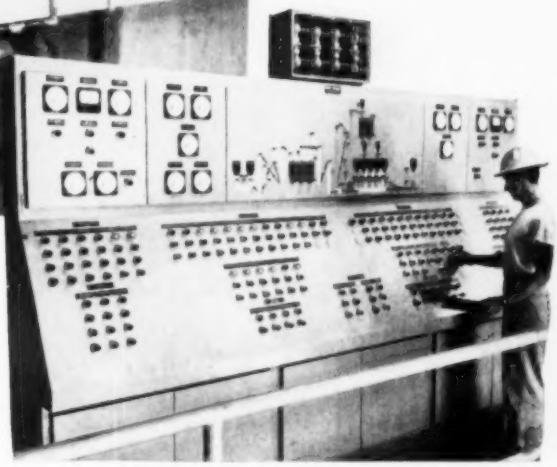

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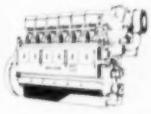

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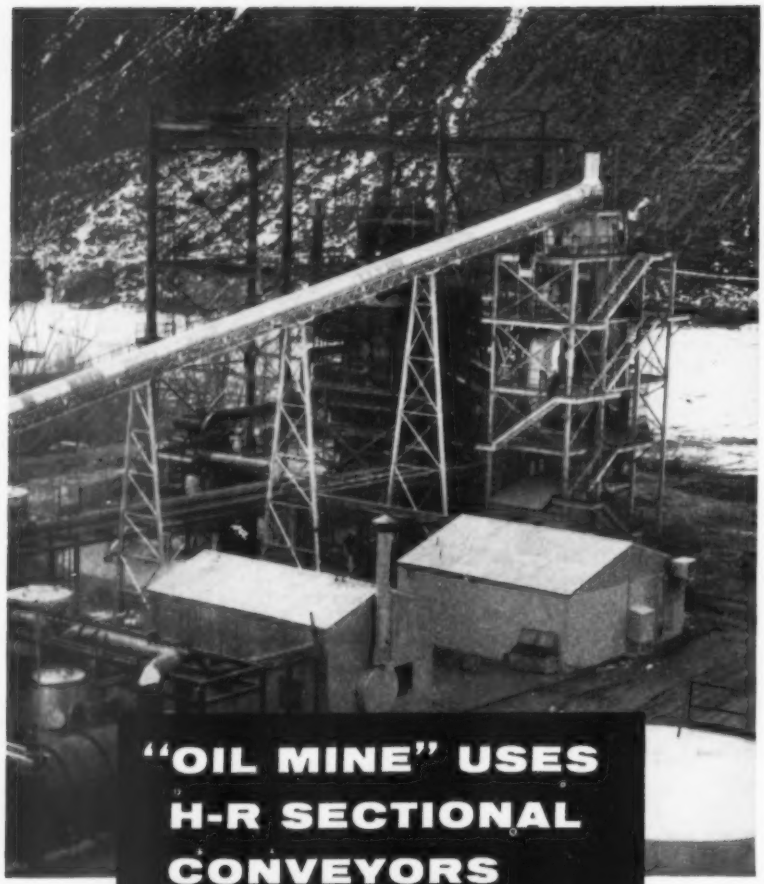


"OIL MINE" USES H-R SECTIONAL CONVEYORS

Oil carried by belt conveyors is one unique aspect of this experimental oil processing plant built in Colorado for the Union Oil Company of California by Stearns-Roger Manufacturing Company of Denver. Hewitt-Robins sectional belt conveyors are used to carry oil-bearing shale through crushing, screening, storage, and final extraction in an operation which may unlock reserves of a trillion barrels of oil. Because of standard design and interchangeable components, these H-R factory-built sectional conveyors are easily lengthened or relocated to give flexibility to the system.

These pre-engineered conveyors are designed to handle bulk materials from wood chips to lead ore at capacities up to 1000 TPH and speeds as high as 650 FPM. They are easily assembled in the field by your own men.

For information or service, contact your local H-R representative or Hewitt-Robins, Stamford, Conn.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J. Amsterdam, Holland • Johannesburg, South Africa • London, England • Montreal, Canada • Paris, France

Enter 166 on card, page 105

MYRON F. PIPES has been named to the position of representative for the Central Sales District by the Electric Steel Foundry Company,

M. F. Pipes

J. Oliver

Portland, Oreg. Mr. Pipes will be primarily responsible for representing ESCO's construction equipment to manufacturers of original equipment.

JOHN OLIVER, whose job in the past included work with original equipment manufacturers, will move into the Central Sales office, bringing ten years of field sales and OEM experience to his new duties.

Directors of the Worthington Corporation, Harrison, N. J., have elected A. E. CARTER vice-president of manufacturing. Mr. Carter will succeed Leslie C. Ricketts, who has relinquished this position in order to devote full time to his increased responsibilities as group vice-president of five Worthington operating divisions located in New Jersey and Massachusetts.

Mr. Carter joins Worthington from the Ford Motor Company, where he had been manager of the Ford parts plant at Rawsonville, Mich.

The promotion of FRANK V. DONAGHUE to manager of truck tire sales for the Philadelphia division of The General Tire & Rubber Company, Akron, Ohio, has been announced.

Formerly salesman in the Baltimore, Md., territory, Mr. Donaghue has been associated with General Tire in various sales capacities for many years.

Machinery Mart, Cleveland, Ohio, has been appointed distributor by the Kwik-Mix and Koehring divisions of the Koehring Company.

NEWEST WAY TO BETTER SCREENING

Send for this valuable NEW BOOKLET *TODAY!*

SECO
Twin-Bearing
SCREENS
Booklet TB-21
FOR FAST, EFFICIENT SCREENING OF SAND
AG LIME • GRAVEL • CRUSHED STONE
COAL • CINDERS • SLAG • ORES
FERTILIZERS • FEED • FOUNDRY SAND
PHOSPHATES • WOOD CHIPS • GRITS

Here it is . . . just off the press . . . a colorful NEW booklet that will introduce you to a new concept of two bearing vibrating screen construction and performance . . . SECO TWIN-BEARING SCREENS.

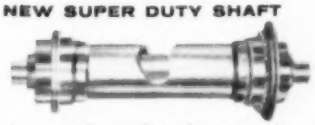
What ever your screening requirements, we sincerely believe you'll do the job better . . . and at lowest cost per ton . . . with SECO TWIN-BEARING SCREENS on your job.

They're backed by over a quarter century of SECO dependability on the toughest screening jobs imaginable. They're the product of one of America's leading manufacturers of vibrating screens.

Request SECO BOOKLET TB-21 **SCREEN EQUIPMENT CO., INC., Buffalo 25, New York**

YOU'LL WANT ALL 4 OF THESE GREAT NEW SECO *features*
when you buy 2 bearing screens

For Longer Life
NEW SUPER DUTY SHAFT



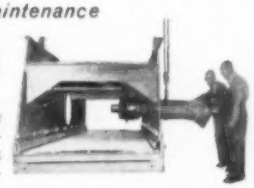
for stout-hearted performance through peak loads . . . with an extra margin of safety.

For Longer Life
OIL BATH LUBRICATION OF BEARINGS

gives better lubrication and faster starts in any weather.

For Easier Maintenance
Patented REMOVABLE SHAFT

patented single unit construction for quick removal or interchange.



U. S. Patent No. 2751080

For Smoother Performance and More Accurate Results
GREATER ECCENTRICITY

offsets any tendency to lose vibration amplitude.

WILLIAM P. KESEL has been appointed export manager of Hewitt-Robins, Inc., Stamford, Conn., effective Sept. 30. He succeeds J. J. Murray, who retired on that date but continues as a consultant to the company.

RALPH J. CALETRI has been named staff assistant to Frank E. Farrell, director of automotive sales, Bendix Products Division of the Bendix Aviation Corporation at South Bend, Ind.

The Metal Products Division, Koppers Company, Inc., Baltimore, Md., has appointed EARL L. WILSON JR. as manager of its eastern district. Prior to his latest promotion, Mr. Wilson was sales manager of Koppers Box Machinery Department at Glenarm, Md.

In his new position, Mr. Wilson will direct the Division's sales activities in eastern New York state, northern New Jersey, and New England. He will make his headquarters at the company's district office in New York City.

HAROLD WHITE, assistant sales manager of Eagle Iron Works, Des Moines, Iowa, was awarded a "One Million Mile Club" plaque by United Air Lines in recognition of 1,200,000 miles of air travel. Mr. White accumulated this tremendous number of air hours traveling all over the country to assist gravel producers with aggregate processing problems.

H. White

H. K. Cogswell

The Western Machinery Company, San Francisco, Calif., appointed H. K. COGSWELL as eastern regional sales manager. From headquarters in New York City, Mr. Cogswell will oversee the company's sales operations in the eastern states.

Prior to his appointment as eastern regional manager, Mr. Cogswell was Western Machinery Company field sales engineer for the southwest territory, with headquarters in Phoenix, Ariz.

Appointment of R. L. CLEMENT as Detroit district manager has been announced by The W. W. Sly Manufacturing Company, Cleveland, Ohio.

For the last six years, Mr. Clement was manager of production engineering at the Sly factory. He succeeds ARTHUR J. MANLEY, who has been named Chicago district manager.

ROBERT G. ALLEN has been elected to the board of directors and the executive committee of Bucyrus-Erie Company, South Milwaukee, Wis. Mr. Allen is executive vice-president of Bucyrus-Erie in charge of all manufacturing and sales. He joined the company in 1957 as a vice-president.

FLEXCO® KEEPS 'EM ROLLING!

Partial view of the conveyor belt system at Material Service Corporation yard #15, Lockport, Illinois. This company is the largest aggregate producer in Illinois. Maintenance men here, and at other Material Service Corporation plants, depend on Flexco fasteners to keep belts operating to maintain tight production schedules.

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS WITH FLEXCO . . . The quality fastener for all heavy-duty conveyor belt applications: SAND & GRAVEL, CRUSHED ROCK, COAL & METALS, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

NEW "25-PAK"

"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4623 LEXINGTON STREET • CHICAGO 44, ILLINOIS

Enter 168 on card, page 105

Cutting costs is the primary function of portable conveyors

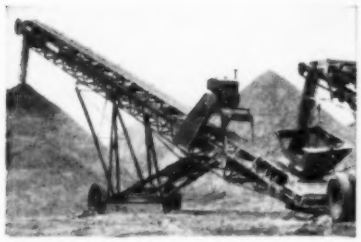
To make the greatest cost savings, portable conveyors must:

. . . have quality construction for long life and trouble-free operation. They must be available in the length and capacity range to suit your needs. They must be available with the features and accessories you want—screens, power hoists, pneumatic or steel wheels, gas or electric drives, etc.

They must be easy to move around the yard . . . easily towed from job to job. They must withstand constant use and frequent movement.

Shown above is the portable conveyor of advanced design, the Barber-Greene 363. Shaft and gear reducer drive—no chains—no sprockets, full swiveling wheels, Acme take-ups and many other exclusive features.

Shown below are other models in Barber-Greene's complete line of cost-cutting conveyors.



Model 374 cuts cost at high capacity. With capacities up to 425 t.p.h., this heavy-duty machine has antifriction bearings, shaft and gearbox drive, hydraulic boom hoist and other features.

Model 358 cuts cost of car unloading. Feeding a conveyor, this car unloader releases cranes and other expensive equipment for other work. Handles gravel, sand, stone, cinders, etc.

Model 362—low-cost, high-quality portable. Three-roll carriers, swivel wheel truck, and many other features not available on conveyors of this low-price range, are standard on the 362.

56-8-PO

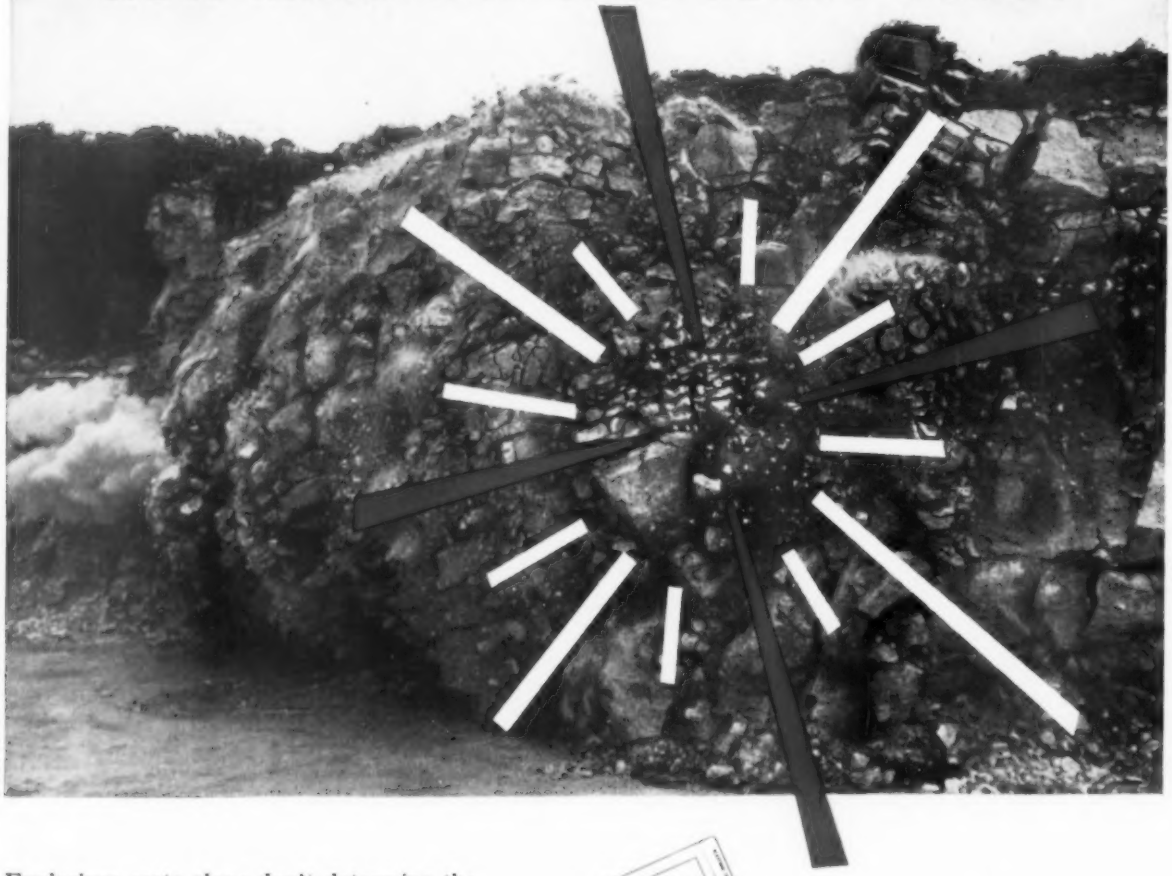
Write for literature on any portable in the Barber-Greene line.

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

HOW MUCH DID THIS BLAST COST?



Explosives costs alone don't determine the value of a given blast. The explosives you use have a direct effect on the whole operation: drilling, digging, hauling and crushing.

You can find out, quickly and easily, the true, complete cost on any blast by using the new, simplified computing method developed by Atlas. It's called the Blasting Cost Chart, and it's yours without cost or obligation.

Use this new method to learn your real blasting costs. It will help you plug profit leaks and come out money ahead in your blasting. Your nearest Atlas representative will show you how the chart works, and you can keep the actual figures within your own organization.

EXPLOSIVES
DIVISION
ATLAS
POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

B. M. Bird

G. Kepley

The Jeffrey Manufacturing Company, Columbus, Ohio, announces the impending retirement on December 31 of BYRON M. BIRD, manager of the company's Materials Preparation Department. Prior to joining the Jeffrey organization in 1944, Mr. Bird had been associated with the U. S. Bureau of Mines and the Battelle Memorial Institute, Columbus, Ohio, where he gained a world-wide reputation in the benefication of raw materials.

Replacing Mr. Bird as manager of the Materials Preparation Department will be GEORGE KEPLEY, formerly district manager of the Bluefield, W. Va., office. EDWIN C. STEPHENSON has been transferred from the Pittsburgh District office to replace Mr. Kepley in the Bluefield District office. PAUL POLING, a sales engineer in the Birmingham, Ala., office, will replace Mr. Stephenson in Pittsburgh.

Announcement has been made of the appointment of Champion, Inc., Iron Mountain, Mich., as a distributor of industrial rubber products manufactured by United States Rubber Company's mechanical goods division plants in Passaic, N. J., and Philadelphia, Pa.

The Iron Mountain firm will distribute U. S. Rubber conveyor belting, transmission belting, rod and sheet packing, and a wide range of hose and other industrial products.

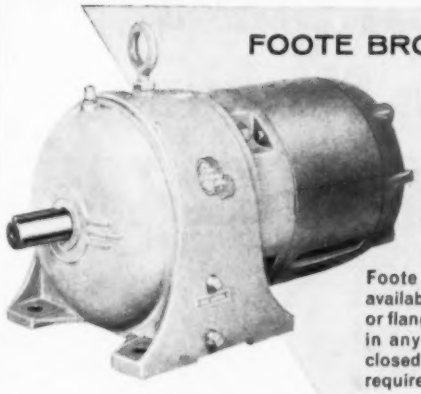
Directors of the Chicago Pneumatic Tool Company, New York, N. Y., have elected J. C. MABE, vice-president in charge of plant operations, a member of the board.

Mr. Mabe joined Chicago Pneumatic in 1955 and was elected a vice-president in 1957.

FOOTE BROS. **Motorized Drives**

Duti-Rated LIFETIME GEARING

Gives You More Power Per Dollar



FOOTE BROS.-LOUIS ALLIS

GEARMOTORS

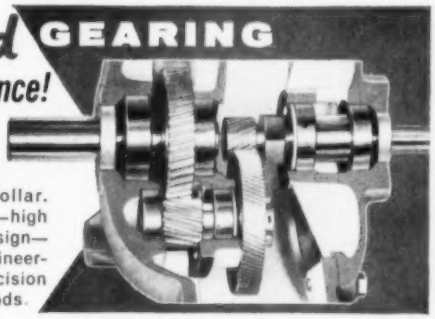
1 to 150 HP...Single, Double, Triple, Quadruple Reductions . . . Output Speeds from 780 to 7.5 RPM

Foote Bros.-Louis Allis Gearmotors are available in over 3500 types and sizes. Foot or flange mountings. Motors can be ordered in any type—open drip-proof, totally enclosed, explosion proof, etc. to meet your requirements.

Duti-Rated GEARING

Makes the Difference!

Duti-Rated Gearing is the heart of Foote Bros. Motorized Drives . . . drives that give you more load capacity and wear life per dollar. This is premium quality gearing—high hardness, accurate, balanced design—the product of thousands of engineering and development hours, precision tooling and manufacturing methods.



FOOTE BROS.

Line-O-Motor

1 to 75 HP...Double, Triple Reductions...

Ratios: 5:1 thru 238:1

Line-O-Motor Drives accept any NEMA frame motor . . . permit you to use your own motor or specify type to meet plant standardization. Foot or flange mounted.

Write for CATALOG MRA. It has complete details and selection data on Foote Bros. Motorized Drives.

this trademark stands for the finest industrial gearing made

FOOTE BROS. Duti-Rated LIFETIME GEARING

T. M. REG. U. S. PAT. OFF.

FOOTE BROS.

Better Power Transmission Through Better Gears

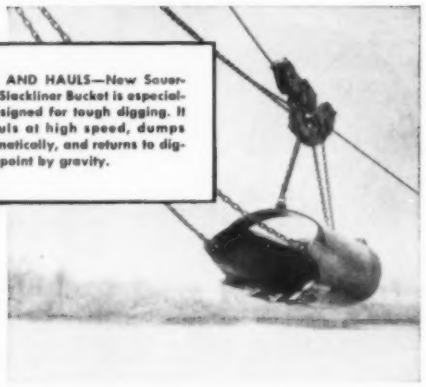
FOOTE BROS. GEAR AND MACHINE CORPORATION

4571 South Western Boulevard Chicago 9, Illinois

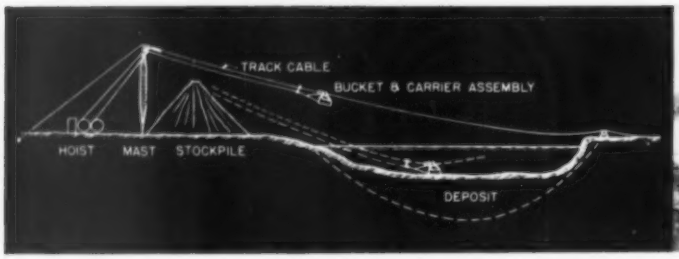
Enter 171 on card, page 105

FROM PIT TO STOCKPILE...

Dig and Haul at Lowest Cost with a Sauerman Slackline



DIGS AND HAULS—New Sauerman Slackliner Bucket is especially designed for tough digging. It inhauls at high speed, dumps automatically, and returns to digging point by gravity.



STOCKPILES MATERIAL—Regardless of long hauls, the Slackline builds a large surge pile to allow charging the plant at any desired rate. Plenty of material is in ready reserve for seasonal or unexpected increases in schedule.

Operating costs as low as 8¢ per yd. for labor, power and maintenance are reported by Slackline Cableway owners when digging free-caving material at average depth and haul distances.

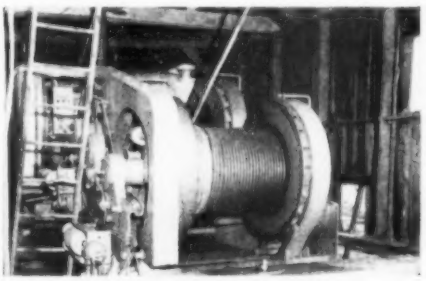
These low costs are achieved by using just one machine—the new Sauerman Slackline Cableway. Multiple equipment is not needed to supply your required tonnage. For example, on an average haul and digging depth, a single medium size machine will charge a 200 tph. plant.

The high Slackline mast permits building a large pile which can supply plant demands through a plate feeder and tunnel conveyor, front-end loader or clamshell. The new Sauerman torque converter diesel-hoist automatically matches power to load demands and is designed for continuous duty. Fluid drive cushions out shock loads to reduce fuel and maintenance costs, extend cable life.

Increasing land values and depleting resources make it necessary to get all the material out of your deposit. You can do this with a Sauerman Slackline. The machine will dig from ground level to deep under water and keep your plant running additional years at the lowest possible operating cost. Several pits are now operating Slacklines on 1000-ft. spans with average hauls of 500 to 700 ft. and from 100-ft. depths.

Write or call, giving your tonnage requirements, depth and length of deposit—if available. We will promptly supply more information on Slackline Cableways, and show you how to *save with a Sauerman*.

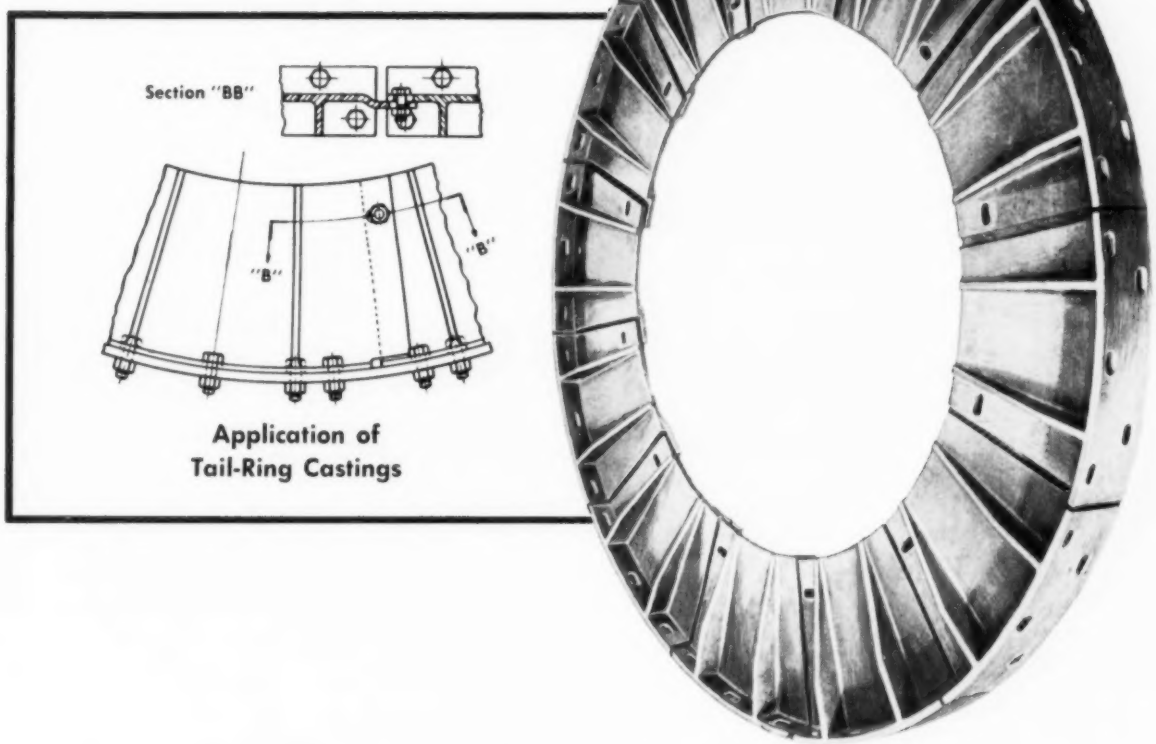
CONTROL IS REMOTE, EFFICIENT AND SAFE—Control station can be conveniently located at any strategic point in plant area. Operator can watch entire operation. Fatigue is minimized and personal danger eliminated.



TORQUE CONVERTER INCREASES PRODUCTION, CUTS MAINTENANCE—Now available, the new Sauerman Torque Converter Hoist automatically matches power to load, provides a smooth and steady flow of material, reduces fuel, maintenance and cable costs.

SAUERMAN BROS., INC. 634 SO. 28th AVE. BELLWOOD, ILL.
LInden 4-4892 • Cable CABEX–Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks



Application of
Tail-Ring Castings

WHY B&W TAIL-RING CASTINGS GIVE YOU LONGER CONTINUOUS SERVICE

Light, strong B&W Tail-Ring Castings have improved kiln performance throughout the rock product industry. Made of heat-resistant Grade HH alloy, they have brought increased brick life and longer continuous service to 88 kilns in 17 plants. Here are some of the reasons why...

- At the feed end of the kiln, B&W Tail-Ring Castings withstand temperatures of approximately 2000° F.
- With B&W Castings, you get a kiln gas opening of the proper size without special installation and cutting of bricks.
- Heat-resistant castings provide years of service without extra brick protection. Only standard kiln lining is necessary.
- Spillage of raw material into dust chamber is minimized. Overlapping segments are designed so that feed material falls over joint during kiln rotation.
- Distortion of kiln shell is eliminated. Ample expansion space for castings is provided by using elongated bolt holes and adequate in-between space.
- Tight kiln sealing is maintained. Kiln shell does not change shape even under rigorous service.
- Small 30° segments of castings are easily handled.

Bulletin S-17 has further information on how you can cut your costs and increase your profits with B&W Tail-Ring Castings. Send for it today. The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

S-479

BABCOCK & WILCOX

BOILER DIVISION

Construction Equipment Division, International Harvester Company, Chicago, Ill., has appointed W. O. BECHMAN as assistant to the general manager, and MERRILL R. BENNETT as manager of engineering of the division.

In his new position, Mr. Bechman will study the needs of the industry and make recommendations for improvements and new design to division management. Mr Bennett, who succeeds Mr. Bechman, formerly was assistant manager of engineering.

Houghton - Arnold Machinery Company, Portland and Bangor, Me., has been appointed a distributor for the Bucyrus-Erie Company, South Milwaukee, Wis. Houghton-Arnold's territory includes the entire state of Maine and Coos County in New Hampshire.

GEORGE J. TALBOT, JR. has been appointed district manager for the Boston Woven Hose & Rubber Company, Boston, Mass., in the New Orleans District.

THIS IS THE END OF

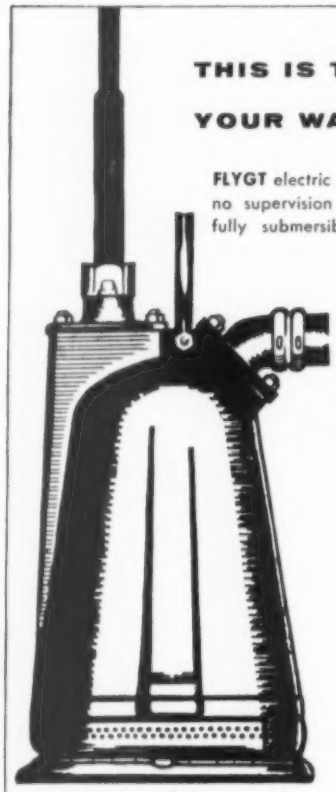
YOUR WATER TROUBLES!

FLYGT electric pumps work round the clock with practically no supervision or maintenance. They are fully portable, fully submersible — need no priming, no installation.

FLYGT pumps can run dry without damage — take a high proportion of solids without clogging.

Other **FLYGT** pumps:
B-80L: 3" hose; 6 hp; 185 lbs; 330 GPM; max. head 170 ft.
B-80M: only 9" diameter; 3" hose; 6 hp; 140 lbs; 300 GPM; max. head 115 ft.
B-150/200L: 6" or 8" hose; 65 hp; 1,200 lbs; 3,000 GPM; max. head 220 ft.

HIGHER HEADS WITH **FLYGT** PUMPS IN TANDEM.



▲ B-38L data: 1½" hose; 1.8 hp; 79 lbs; 75 GPM; max. head 90 ft.

FLYGT

(Clip and attach to your letterhead)

East of the Mississippi:
STENBERG MANUFACTURING CORPORATION
HOOSICK FALLS, N.Y.

West of the Mississippi:
Stanco MFGS. & SALES INC.
1666 NINTH STREET
SANTA MONICA, CALIF.

( ) Please rush full information on FLYGT pumps.
( ) We are interested in a demonstration.

Required capacity: ..... GPM at ..... ft. head

Signature .....

1222

Enter 174 on card, page 105

An aggressive marketing program, which includes the expansion of the established distributor sales and service organization for the new Curtiss-Wright line of construction equipment (formerly sold under the name of Wooldridge), was recently announced. This program will be carried out by the South Bend Division of the company.

Full scale entry into the construction equipment field by Curtiss-Wright through its South Bend Division marks another major step in the broad program of diversification of the company. The Curtiss-Wright Corporation, Wood-Ridge, N. J., is now offering self-propelled and tractor drawn scrapers ranging in size from 7 cu. yd. to 30 cu. yd. and rear dump models in sizes up to 35 tons capacity.

ROBERT CAMPELLO has been appointed general sales manager and EDWARD MCCARTNEY as product sales manager for construction equipment.

The Four Wheel Drive Auto Company, Clintonville, Wis., has organized a Marketing Division to replace the previous Sales Division. G. F. DECOURSIN, formerly vice-president—sales, becomes vice-president—marketing. In his new position, Mr. DeCoursin will be in charge of product origination and product development, as well as the company's sales program. Mr. DeCoursin has been with FWD since 1936 in a variety of sales posts.

Six additions to its field sales organization have been announced by the American Air Filter Company, Inc., Louisville, Ky.

RAYMOND J. DUNN has joined AAF's Shreveport, La., office.

DON RYAN, formerly with the Kennard Corporation, St. Louis, Mo. (an AAF subsidiary), TOM MULVEY and LARRY HARLAN have joined the Air Filter & Equipment Company, Chicago, as sales engineers.

EDWARD A. CRUSE has joined the Detroit Branch office of AAF as a sales engineer.

HAROLD BEE, formerly with the Kennard Corporation, has joined the staff of the Rush Company. Kansas City representative.

Quality Products

DESIGNERS and MANUFACTURERS of EQUIPMENT for the CRUSHED STONE—SAND and GRAVEL INDUSTRIES

EESCO—Designed Plant for large Northeastern States Stone Producer

MODERN DESIGN gives this plant the versatility to meet future production requirements.

- From raw material to finished product EESCO offers a package plant from one supplier.
- Allow us the opportunity of discussing "Design-Production" problems.

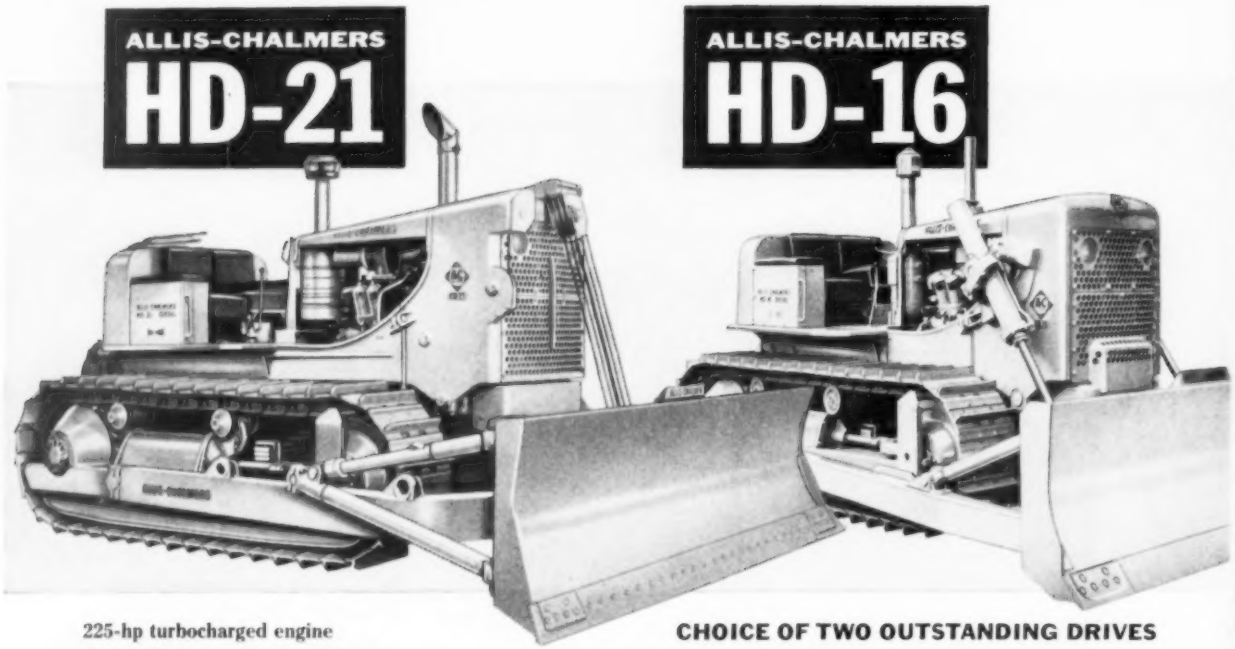
EESCO
provides:

ELEVATORS
BELT CONVEYORS
VIBRATING SCREENS
ROTARY SCREENS
STORAGE BINS
JAW CRUSHERS
DRAG WASHERS
SCREW WASHERS
GYRATORY CRUSHERS
ENGINEERING
BATCHING PLANTS

EASTERN ENGINEERING SALES CO.
25 WEST HOWARD STREET
QUINCY 69, MASSACHUSETTS

ALLIS-CHALMERS CRAWLER TRACTORS . . .

first choice on more and



225-hp turbocharged engine
Hydraulic torque converter drive
56,260 lb (approx. as shown)

The new HD-21 brings you live power for today's big-tractor jobs—and torque converter drive puts it to work automatically. The HD-21 offers more work capacity—dollar for dollar—than any other big crawler tractor you can buy.
HD-21A illustrated – Two other models available

CHOICE OF TWO OUTSTANDING DRIVES

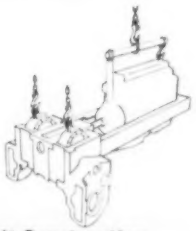
Hydraulic torque converter	All-gear drive
150 net engine hp	141 belt hp
39,090 lb (approx. as shown)	125 drawbar hp

Get up on the HD-16 yourself—and see how it handles jobs ordinarily assigned only to bigger, more expensive crawler tractors. You'll sell yourself—just as more keen-eyed construction men do every day.
HD-16DC illustrated – Five other models available

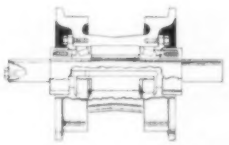
THE ONLY COMPLETE LINE OF CRAWLER TRACTORS

Pioneered and proved by Allis-Chalmers Engineering in Action

Torque Converter Drive gets more work done—automatically provides the right pull or push for every load, at maximum speed for existing conditions. *(Available in HD-21 and HD-16 only.)*



Unit Construction saves valuable time . . . lets you remove any major assembly without disturbing adjacent assemblies.



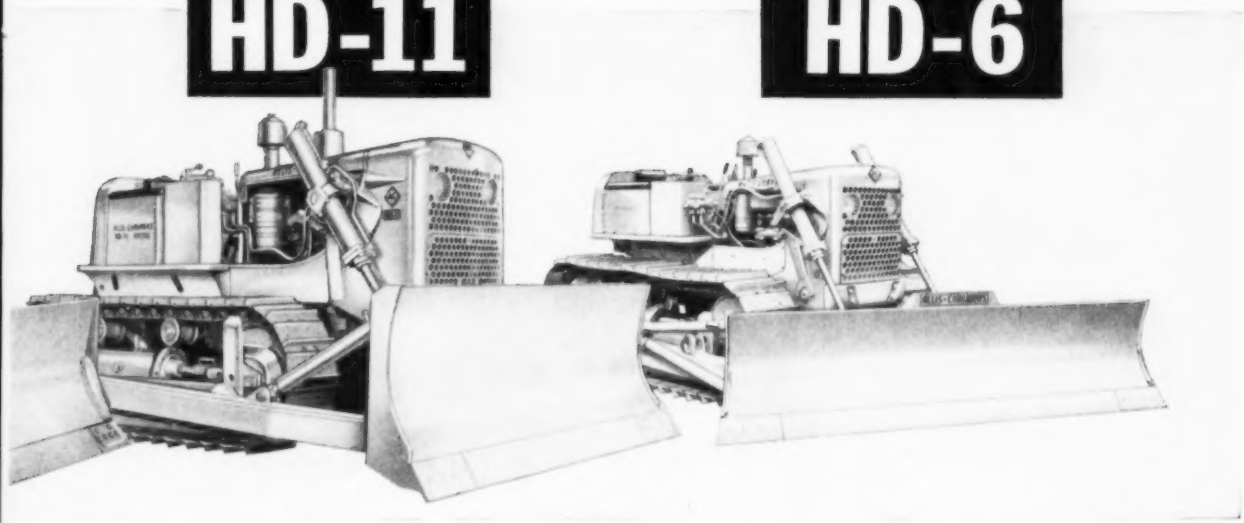
1,000-Hour Lubrication intervals for truck wheels, idlers, support rollers . . . changes daily greasing time into production time.

Look ahead...*move ahead*...and stay ahead

more tough jobs

ALLIS-CHALMERS HD-11

ALLIS-CHALMERS HD-6



94 belt hp

25,960 lb (approx. as shown)

The HD-11 is setting new standards in its size range . . . offers you dozens of work-boosting advantages, including the industry's easiest shift pattern. A single shift takes it from any forward speed to any reverse—gets short-cycle jobs done faster, easier.

HD-11B illustrated – Two other models available

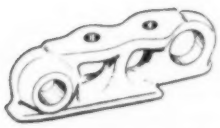
63 belt hp

16,470 lb (approx. as shown)

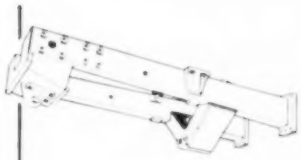
Here's up to 15,500 lb drawbar pull. The HD-6 is the only tractor near its size with big-tractor design advantages—for example, All-Steel Box-A main frame and engine-mounted dozer with direct-lift cylinders for improved weight distribution, accurate dozing and long life.

HD-6E illustrated – Three other models available

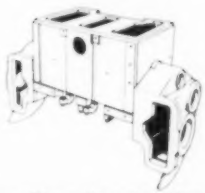
THAT GIVES YOU ALL THESE ADVANTAGES IN EVERY SIZE



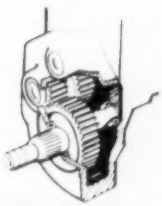
True-Dimension Track heat-treated and machined in the industry's most modern facilities, is setting new track-life records on every type of work.



All-Steel Box-A Main Frame soaks up shock and strain . . . provides improved weight distribution and equipment mounting.



One-Piece Steering Clutch and Final Drive Housing with extreme rigidity and strength . . . line-bored to provide precise alignment of gears and shafts.



Straddle Mounting of All Final Drive Gears with tapered roller bearings on both sides of short, large-diameter shafts . . . provides extra gear life.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

with ALLIS-CHALMERS

Appointment of four new direct factory distributors has been announced by the Davey Compressor Company, Kent, Ohio.

The firms are the Adams Construction Equipment Company, Orlando, Fla., with a branch in Miami; Baker Equipment Engineering Company, Charlotte; S. M. Christhilf & Sons, Inc., Timonium, Md.; and Utilities Equipment Company, Inc., Memphis, Tenn.

WILLIAM P. HENSON and MILTON N. THOMPSON have joined the design engineering staff of Mobile Drilling, Inc., Indianapolis, Ind. They will be engaged in the design and development of new products.

Mr. Henson was formerly with General Motors' Allison Division and the Adams Division of LeTourneau-Westinghouse.

Mr. Thompson was formerly on the engineering staff of the Joy Manufacturing Company and more recently chief engineer for the Drilling Accessory & Manufacturing Company.

The 56-year-old Greer Technical Institute, which 2 years ago pioneered a school in the Middle West to train earthmoving equipment operators, will soon inaugurate another type of school in Wilmington, Ill., to train skilled mechanics for the earthmoving industry.

The 10-week course, called Construction Equipment Mechanics, will run 5½ days per week, 10 hours per day, and will include 60 hours of instruction in each of the following departments: diesel engines, fuel injection systems, torque converters, final drives, steering systems, tractor tracks, cable controls, welding, and bulldozer rebuilding.

All but two of the training programs will be held in Wilmington. The welding and bulldozer rebuilding courses will be held at the Heavy Equipment Operators School at Braidwood, Ill., 4 miles from the site of the new school.

Full information regarding the Construction Equipment Mechanic's training course can be obtained by writing to the Greer Technical Institute, Wilmington, Ill.

HAROLD RILEY has been appointed by the Mission Manufacturing Company, Houston, Tex., as field representative for the Hammerdril with headquarters in Westchester, Pa.

Mr. Riley formerly was in Mission's oilfield sales organization, working in the southeastern part of the United States. He has had extensive experience in field tool sales and service.

H. Riley

J. H. Baer

JOHN H. BAER has been selected to fill the newly-created post of sales manager—administrative for the Mobile Hydraulics Division of Vickers Incorporated, Detroit, Mich., a division of the Sperry Rand Corporation.

Mr. Baer has been with Vickers since 1954 in application engineering and managerial capacities. Prior to his recent appointment, he served as sales manager—automotive products.

Over 500 J. I. Case Company Utility dealers are now able to offer a more constructive service to users of tractor loaders, dozers, backhoes, and various power equipment as a result of attending special "how-to" meetings conducted at local dealerships since mid-March. The training program will continue on tour until dealers in all U. S. territories have been schooled.

The training sessions, which consist of discussion and field work, cover a wide range of subjects, including special market-applications, retail credit arrangements, competitive advantages, etc., of Case 34 and 42 hp. Utility wheel and crawler tractors and equipment.

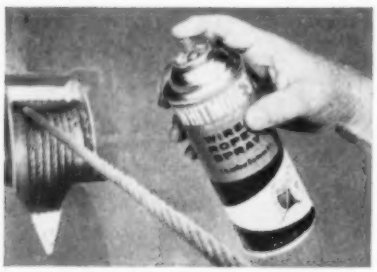
The dealer meetings are directed by William Vogel, assistant sales manager, Utility Sales Division, with assistance and participation of local Case branch personnel.

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.



WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

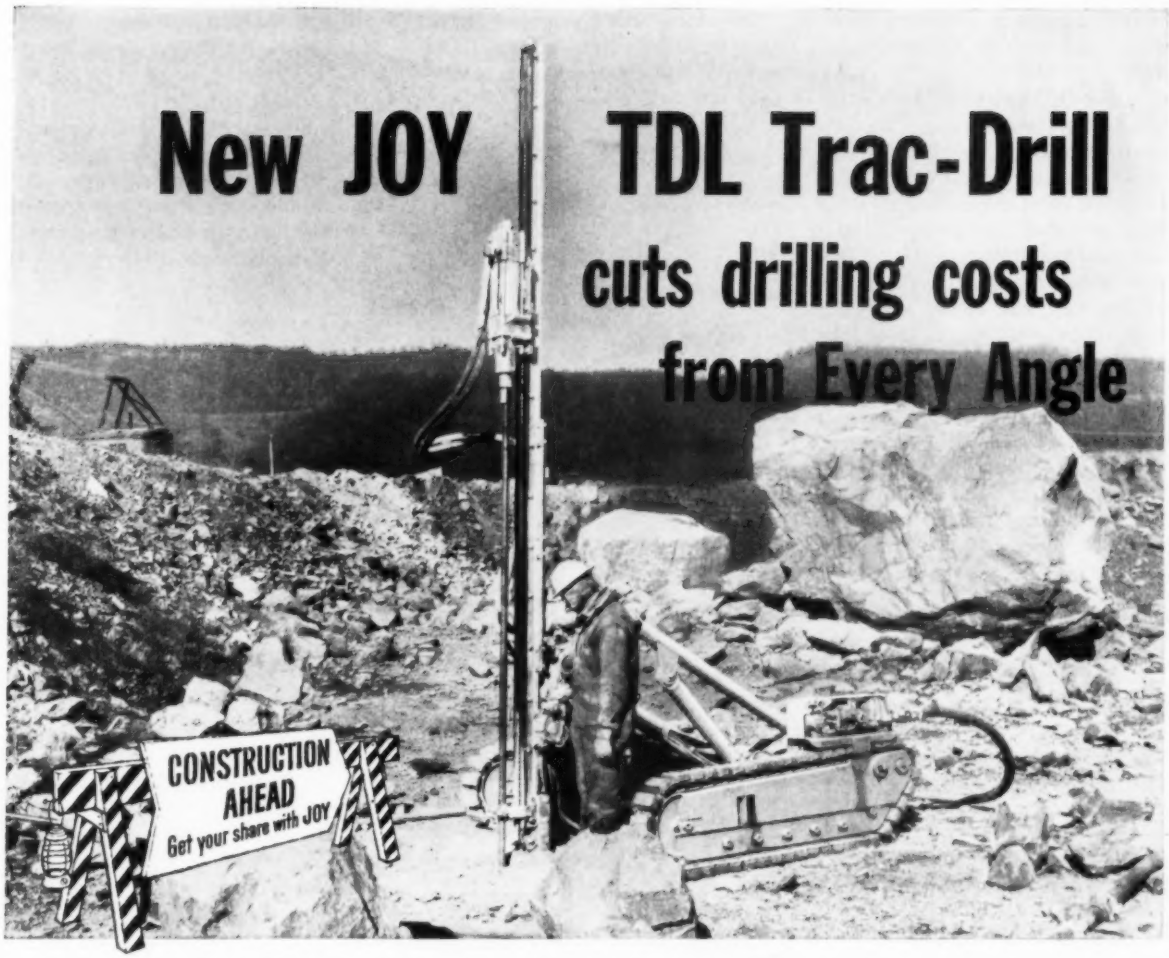
THE WHITMORE MANUFACTURING CO.

LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

Enter 178 on card, page 105

New JOY TDL Trac-Drill cuts drilling costs from Every Angle



. . . more versatility, more economy, more dependability

The TDL is a new lightweight, self-propelled drill chassis accommodating a wide range of Joy drifter drills. You can choose the best combination for your production needs, available air supply and budget requirements.

The TDL chassis mounts any one of 5 famous Joy Silver Streak Drifter Drills—making it possible to drill blast holes 1¾″ to 4″ in diameter, 18′ to 40′ in depth. You select a unit that matches your compressor—for TDL drill combinations give you a range from 250 to 600 c.f.m. THAT'S VERSATILITY.

The TDL has built-in strength that gives excellent drill stability for quick hole spotting even in rough terrain. Practical, simple design permits fast, easy maintenance and keeps downtime to a minimum. THAT'S ECONOMY.

The Joy TDL is made right, built rugged and has powerful Joy Pistonair motors for ample tramming speed and power for any job. It has been proven on rough jobs. THAT'S DEPENDABILITY.

There's more to the story . . . write for the name of your nearest Joy Distributor. He'll show you why the Joy TDL Trac-Drill is your best buy—and how you'll get *your* share of the CONSTRUCTION AHEAD . . . with Joy Construction Equipment. Write ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

The teamwork of the new Joy Trac-Drill and the reliable Joy Airvane Rotary Compressor cuts blasthole costs to minimum. Joy Rotary Portable from 125 cfm through 900 cfm.

Write for Free Bulletin, 238-26

JOY Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.

EQUIPMENT FOR CONSTRUCTION

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • TRAC-DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

Orenda Engines Ltd., manufacturers of jet engines in Canada, recently announced extensive plans for industrial expansion in the United States and Canada. To further these plans, they have formed a new company, Orenda Industrial Ltd., with head offices in Toronto, and a subsidiary company in New York, Orenda Industrial Inc. (formerly Brush Aboe, Inc.).

From new and enlarged offices in Woodside, N. Y., Orenda Industrial Inc. will continue to market the products of the Brush Group of companies in England.

Orenda Industrial plans to expand its operations in this country and extend its sales and service coverage throughout the U. S. for Petter engines. As one of their first steps in this direction, Orenda is opening an office in San Francisco to cover the West Coast.

M. J. ROTROFF has been named manager, general sales, New York City, for the Tractor Group of the Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Two new sales engineers have been named for the Industrial Division of The Dayton Rubber Company, Dayton, Ohio.

MOFFATT SHERARD will cover South Carolina, parts of Georgia, and North Carolina, with headquarters in Columbia, S. C.

JOSH MONTGOMERY will cover North Carolina and Virginia for the Industrial Division. He will headquarter in Greensboro, N. C.

PAUL HINDS, personnel manager of the Hyster Company at Peoria, Ill., has been named assistant manager of the Tractor Equipment Division, with headquarters in Peoria.

DEAN POLSON was made manager of the Martin Trailer Division plant at Kewanee. Mr. Polson was associated with the Martin Machine Company for six years prior to its merger with Hyster.

REX MCCORMICK, formerly sales manager of the Martin Machine Company, was made assistant sales manager of the Hyster Company Tractor Equipment Division.

Morris Machine Works, Baldwinsville, N. Y., has appointed MYRON L. MOFFITT as assistant chief engineer. Mr. Moffitt will be engaged in research and development of new centrifugal pump equipment.

A former applications engineer, Mr. Moffitt has been associated with Morris in various departments of engineering since 1943.

M. L. Moffitt

M. J. Harrison

MONTE J. HARRISON has been appointed a district representative for the Construction Machinery Division of the Clark Equipment Company. Mr. Harrison will represent the *Michigan* line of equipment in Texas and Oklahoma.

Mr. Harrison has been a Clark district service representative for two years. Before joining Clark, he spent seven years with the Link-Belt Speeder Corporation.

CLARENCE E. ZERMER, who formerly handled the Texas-Oklahoma territory, is now Clark district representative in the territory of Oregon, Washington, British Columbia, and Alaska.

The Shield BANTAM Company has available a new 14-minute motion picture featuring materials handling applications with the self-propelled BANTAM Model CR-35 crane-excavator. Actual on-the-job performance of the self-propelled BANTAM, engineering features, work range, job facts, and production data are all features of the new film.

The new movie, *The BANTAM Method*, is a 16mm., full color, sound production. Private or group showings of the film can be arranged by contacting any authorized Schield BANTAM distributor or by writing directly to Schield BANTAM Company, Waverly, Iowa.

Automate the blending of your cement formulation with a MERRICK FEEDOWEIGHT

Perfect uniformity of your cement formulation . . . day in, day out . . . is assured when you use Merrick FEEDOWEIGHTS®. The FEEDOWEIGHT automatically and continuously feeds, blends and proportions *by weight* clinker, gypsum, limestone and all other bulk materials that are used in the manufacture of cement. Used in cement plants all over the world, the FEEDOWEIGHT guarantees finished cement that will meet the rigid specifications of the construction industry.

Merrick also offers the famous WEIGHTOMETER® continuous conveyor scale. For information on either or both of these machines, write us today.

MERRICK *fifty years of "firsts" in automatic weighing*

MERRICK SCALE MANUFACTURING COMPANY
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THE KENNEDY CUBER JUNIOR

The ONLY Small Impact Breaker with the Massive Construction of a Dual Rotor Impactor

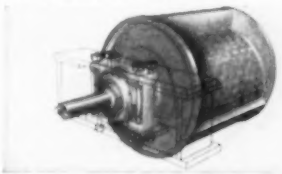
For high tonnage, high ratio of reduction, low cost, and an absolute minimum of flats, the husky, single rotor, 75 to 150 horsepower KENNEDY Cuber Junior answers a vital need. The same exclusive KENNEDY rotor which has been so successful and so economical in the Cuber Senior is responsible for the high performance of the KENNEDY Cuber Junior.

The KENNEDY Cuber Junior

- combines primary and secondary reduction in one operation . . . reduces the number of machines required because of its high capacity. *The result* —marked savings in capital investment.
- shatters rock along the lines of natural cleavage . . . operates on the principle of true, controlled free impact. *The result*—maximum useful output of evenly graded, cubical product.
- is the easiest impact breaker to maintain . . . output and product quality are kept high with the maximum effective use of wearing parts. *The result* —sharply reduced per ton maintenance charges.

The outstanding performance of the KENNEDY Cubers is due to rotor design. The rotor itself is welded, laminated, heavy steel plate. Three cast manganese steel hammers are rigidly attached to the rotor by an exclusive method that permits quick, easy adjustment for wear. The heat treated, alloy steel shaft is pressed and locked into the rotor core. Heavy duty, self-aligning, spherical roller bearings are rigidly attached to the heavy base frame in box section to stand up under the severe punishment of the breaking action. Manganese steel end discs, flush with the main housing liners prevent attrition of material between hammer ends and sides of the Cuber and prevent rounding of the hammer ends, confining wear to the manganese hammers.

This superior rotor is found only in the KENNEDY Cubers.



Consult today with a KENNEDY sales engineer about your crushing problems.

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Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Rod and Ball Mills • Kilns • Dryers • Screens • Conveyors • Complete Crushing, Lime and Cement Plants.

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GEOPHYSICAL SUBSURFACE EXPLORATION

. . . simplified with the Barnes Layer Method

Quick and Accurate . . . direct reading earth resistivity surveys provide soil contour profiles that clearly indicate type, location and depth of individual soil layers.

Earth Resistivity Measuring

"MICHIMHO" VIBROGROUND®

Model 274M is designed for use with the Barnes Layer Method. Reads soil conductance directly to locate gravel deposits, determine depth of bedrock and water table. Weight only 20 lbs. with self-contained vibrator power supply. Barnes Layer Surveys are readily made by non-technical operators using the VIBROGROUND.

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Just prepared . . . new MICHIMHO Application notes on Model 274M. Write today.

1-35.3

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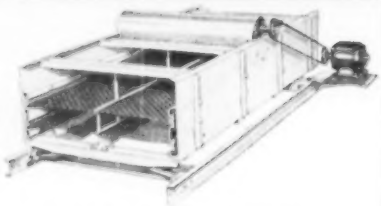

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- **FAST SERVICE**

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UNIVERSAL VIBRATING SCREEN CO.

Racine, Wisconsin

Quality Screens Since 1919

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Industry Personalities

SMITH W. STOREY was recently elected chairman of the board of directors, a newly-created post, at General Portland Cement Company, Chicago. He will continue as president and chief executive officer. E. L. GIBSON was elected executive vice-president.

Officials of Bestwall Certain-teed Sales Corporation, sales organization for Bestwall Gypsum and Certain-teed Products Corporation, have announced three sales personnel changes.

C. J. LUNDBLAD, formerly merchandise manager of Certain-teed's Insulation Division, has been appointed Philadelphia district sales supervisor, with headquarters in Wilmington, Del.

R. W. MILTZ, who has been named sales supervisor of the Cleveland district, had been serving as Cleveland district roofing supervisor.

S. H. BUNDY will supervise sales in the Dallas district. He was a salesman in the Kansas City district at the time of his appointment.

FRANK M. BELL has been named field marketing manager of insulation products of the United States Gypsum Company with headquarters in the company's main office in Chicago, Ill. He succeeds W. D. Alseth, who is now Omaha (Neb.) district manager. Mr. Bell has served as district manager in the Harrisburg, Cleveland, and Detroit office, all in Ohio.

Oregon Portland Cement Company recently announced the appointments of LAWRENCE F. NEWLANDS to the post of secretary-treasurer and EMERY N. SUNDBERG, to assistant secretary.

GEORGE A. SMITH has been appointed traffic manager (Western Region) of the Universal Atlas Cement Division of United States Steel Corporation. In his new position, with offices in Kansas City, Mo., Mr. Smith will have responsibility for traffic and transportation matters relating to Universal Atlas at Duluth, Minn.; Independence, Kans.; Waco, Tex.; Hannibal, Mo.; and also the division's gypsum operations at Watonga, Okla.

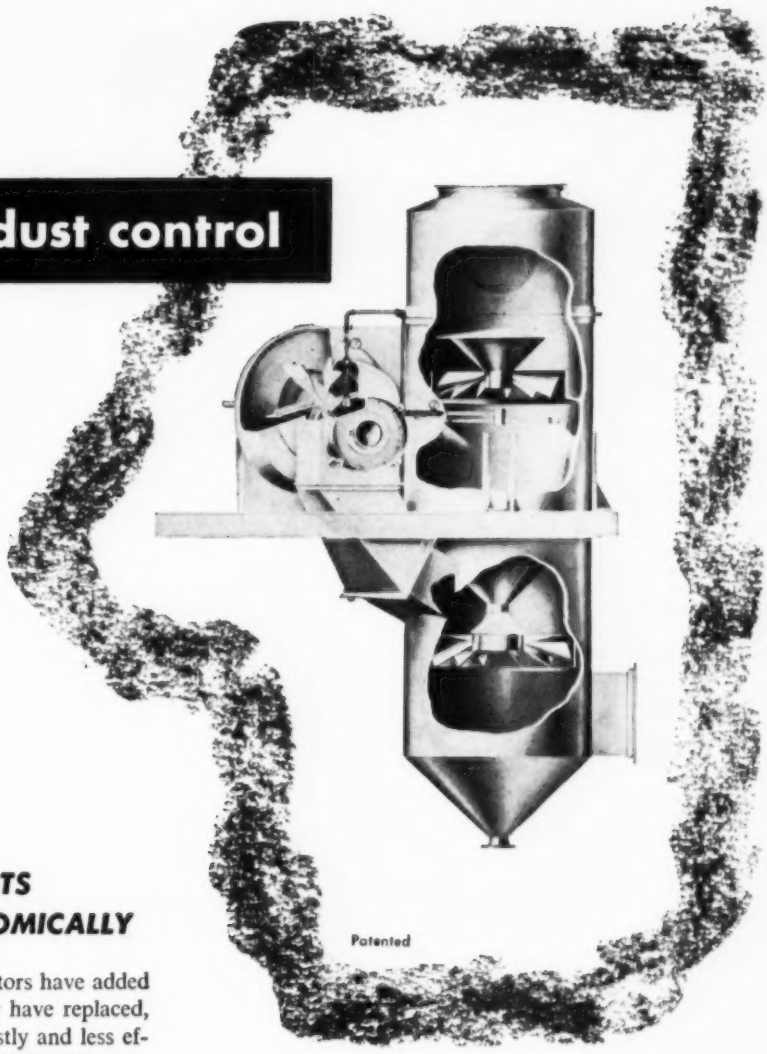
G. V. Cosgrove

GEORGE V. COSGROVE has been named superintendent of the Alpha Portland Cement Company's nearly completed new plant at Lime Kiln, Md. Mr. Cosgrove, who started with Alpha in July, 1951, as plant engineer at Manheim, W. Va., was combustion engineer for all Alpha plants before moving to his present position.

R. J. MCCARTHY, president of Missouri Refractories Company, Los Angeles, wholly owned subsidiary of Mexico Refractories Company, has returned to his post after a year's leave of absence. Mr. McCarthy organized the new Atlantic Division of the Mexico Refractories Company in Elizabeth, N. J. He also has served as a management consultant to their Canadian subsidiary, Refractories Engineering & Supplies, Limited, Hamilton, Ont. He will continue in a supervisory capacity with the other two operations.

MARK M. FRIMODIG has been appointed manager of Michigan Chemical Corporation's new magnesium oxide plant at Port St. Joe, Fla. His outstanding accomplishments in process development, plant design, and plant operation while he was serving in the firm's Rare Earths department won for him the Michigan Chemical Corporation Achievement Award in 1957.

. . . in wet dust control



NEW DUCON DYNAMIC WASHERS

RECOVER DIFFICULT DUSTS EFFICIENTLY AND ECONOMICALLY

Ducon UW-4 Dynamic Wet Dust Collectors have added a new dimension in dust recovery. They have replaced, with outstanding success, many more costly and less effective dust collectors in the recovery of "difficult" materials, such as fine and abrasive dusts in kilns, rotary driers and other applications.

The UW-4 Washers are also ideal for high loading conditions where maximum efficiency is desired.

Ducon UW-4 washers offer other unique advantages, including constant air capacity, low water consumption and rugged construction. They are self-cleaning and fire and explosion proof.

For complete information write for Bulletin W-7456.

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THE DUCON COMPANY INC.
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CYCLONES • CENTRIFUGAL WASH COLLECTORS • TUBULAR CLOTH FILTERS • DUST VALVES

time will tell...

made hard and tough to the core...for the long grind

The STANDARD OF COMPARISON around the world in grinding balls is Moly-Cop. Time and again, in mills all over the world the long wear of Moly-Cop balls has been the answer to production economies. Next time you order grinding balls — think a minute — then specify Moly-Cop alloyed, forged and heat treated grinding balls by Sheffield.

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SHEFFIELD DIVISION ARMCO STEEL CORPORATION SHEFFIELD PLANTS: HOUSTON • KANSAS CITY • TULSA

EXPORT REPRESENTATIVES, THE ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

Lima Austin-Western Model 101-S Plant, owned by C. W. Allen, Wilburton, Okla., producing gravel filter for Table Rock Dam on White River.

LIMA Austin-Western 101-S Plant Speeds Dam Project in Missouri

This high-capacity Model 101-S Plant is being used to produce gravel filter for the slope of Table Rock Dam, on White River, near Branson, Mo. Using riverbed gravel, the plant turns out an average of 100 cu. yds. per hr. of material ranging in size from 3 in. down to fine sand.

This portable crushing and screening plant sets a new high standard for high production and low maintenance. While intended primarily for gravel operation, it performs equally well in quarry service when combined with a portable primary. Standard equipment includes a 10 x 36-in. primary jaw crusher, a 30 x 20-in. roll crusher, 30-in. conveyors, and a 4 x 12-ft. inclined, positive-throw type vibrating screen. It may be had with either a shovel-loading hopper or a swivel drive for feed conveyor. It is a completely self-contained unit that can be transported over most highways without special permit.

Make your next crushing and screening plant a Lima Austin-Western for all-around economy and greater returns on the investment. Call on your nearest distributor for full information. Or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

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MYRON ALLAN SWAYZE, director of Research for the Lone Star Cement Corporation of New York, and LOUIS JACOB TROSTEL, manager of research laboratories, General Refractories Company, Baltimore, Md., recently received awards of merit from the American Society for Testing Materials in recognition of their efforts in the Society's behalf.

Mr. Swayze is a frequent contributor to the Society's Committee C-1 on cement. Mr. Trostel has served as secretary of the Society's Committee C-8 on Refractories.

William E. Daugherty has been promoted to the post of district sales manager for the southern California, southern Nevada, and Arizona territories of the Mexico Refractories Company.

U. V. Johnston has been named head of the newly-formed roof deck division of Perlite of Houston, Inc. Mr. Johnston was formerly in charge of the roof deck department of Blue Diamond of Dallas.

M. J. Grove Lime Company officials have announced the appointment of JACK MOFFETT as chemist for the company. Mr. Moffett will be located at the Grove plant in Frederick, Md., where new laboratory facilities are being installed under his direction.

The appointment of GEORGE E. BATTEY JR. as office engineer for the Los Angeles office of the Portland Cement Association has been announced. In his new position, which became effective August 1, Mr. Battey is in charge of office administration of the Los Angeles district office.

RALPH E. RITCHIE has been promoted to the post of assistant manager of the Arkansas branch of Fischer Lime and Cement Company, North Little Rock, Ark. He joined Fischer in 1942 in the Memphis territory sales department and since 1953 has been sales representative in southern Arkansas.

Four executive promotions have been announced for The Ruberoid Company. E. J. O'LEARY, executive vice-president, has been elected president and chief executive officer of the company.

E. J. O'Leary

S. Woodward

F. K. Sweeney

K. R. MacDonald

STANLEY WOODWARD, president, has become vice-chairman of the board.

FREDERICK K. SWEENEY, general sales manager, was made vice-president in charge of sales.

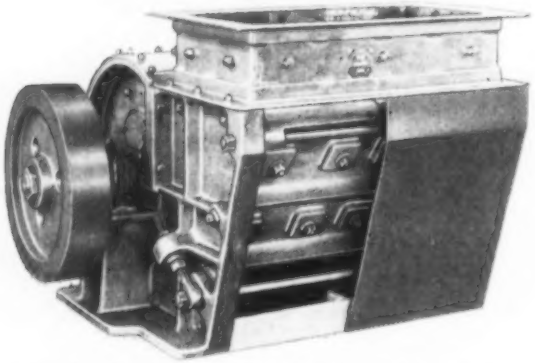
KENNETH R. MACDONALD, director of purchases, was elected vice-president in charge of purchases. All four promotions are effective immediately.

Ruberoid, founded in 1886, is a producer of asphalt and asbestos building materials and operates 16 plants throughout the United States.

SMITH W. STOREY has been elected chairman of the board of Consolidated Cement Corporation, Chicago. He will continue as president and chief executive officer of the firm. E. L. GIBSON was elected executive vice-president.

EARL F. MAYER has been appointed controller of the Louisville Cement Company. He was formerly controller of the Clearing Machine Company, Hamilton, Ohio.

American's **30 SERIES HAMMERMILL**



for high volume reduction with minimum maintenance rely on hammermills backed by American's 50 years of experience.

Write for American's bulletin **BETTER STONE CRUSHING**

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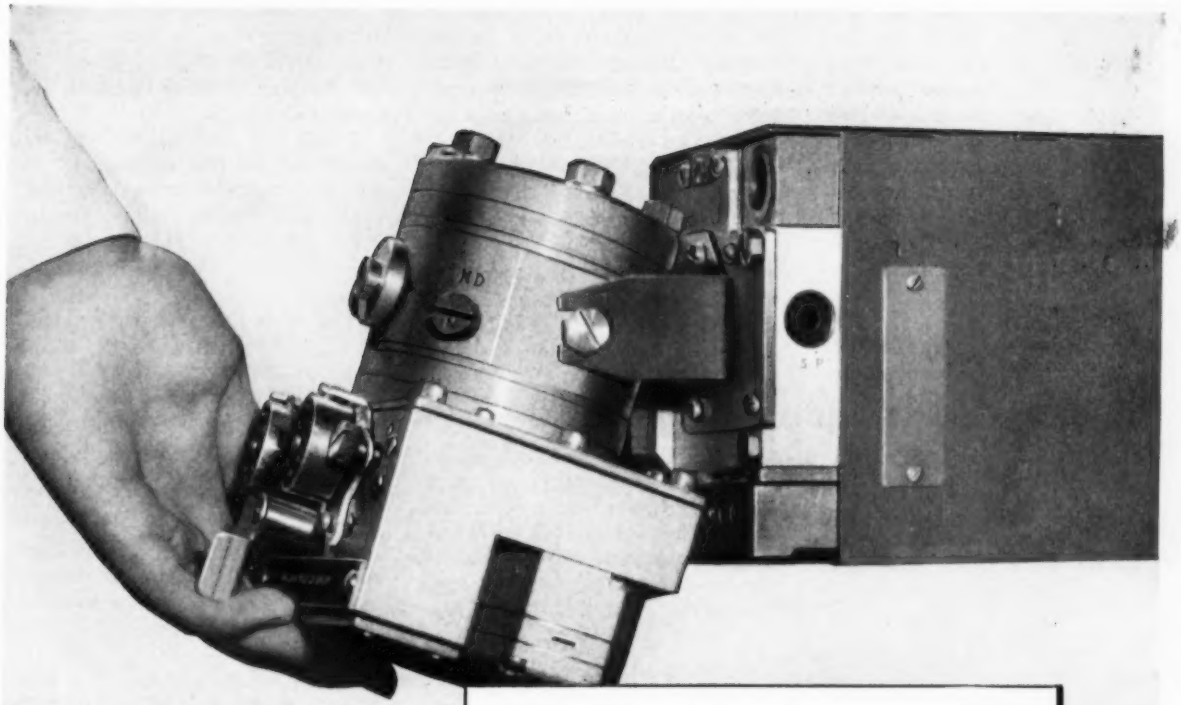

You save in many ways with TEL-O-SET controllers...

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Control any process variable with a simple yet highly sensitive *Tel-O-Set* controller. Get all the high-performance characteristics you expect from a modern controller . . . plus specific savings.

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- Process remains on manual control when controller is removed.
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Get complete details on controllers and other *Tel-O-Set* instruments from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

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Honeywell

First in Control

H. Hanks Jr.

HOWARD HANKS JR., formerly consulting service engineer for E. I. du Pont de Nemours, has been appointed operations engineer on the staff of Marquette Cement Manufacturing Company, Chicago.

Mr. Hanks had been engineer and assistant plant superintendent for Lone Star Cement Corporation prior to his association with Du Pont.

EDWARD L. MAUNTLER has joined the Ohio Lime Company, Woodville, Ohio, as a member of the engineering department.

WILLIAM L. VAUGHAN, formerly Central Industrial Division manager, has been named manager of process materials sales by the United States Gypsum Company, Chicago, Ill.

PHILIP A. GROLL was elected to the board of directors of Lehigh Portland Cement Company, Allentown, Pa. Mr. Groll joined the company in 1925. At present he is executive vice-president in charge of manufacturing.

During his 33 years with the firm, he has held positions as research and plant chemist, manager of the company's Oglesby, Ill., plant and assistant operating manager at the Allentown office. In 1954, he was elected vice-president and operating manager and in 1955, he was promoted to his present position.

RAYMOND WILSON, plant manager at the Union Bridge, Md., plant of Lehigh Portland Cement Company, has retired after 21 years of service. Walter A. Viebrock will succeed Mr. Wilson.

EDWARD BARNES KARR, auditor of the New York Trap Rock Company until his retirement in 1947, died on June 19 after a brief illness. He was 79 years old.

The following changes in personnel and operating assignments have been announced for the Chemical and Minerals Division of the J. R. Simplot Company.

PHILIP T. PETERSON, has assumed the position of manager at the firm's new clay mine operations at Boville, Latah County, Idaho. Previously he was manager of the Gay Phosphate Mine at Fort Hall, Idaho.

The former mine superintendent at Gay Phosphate Mine, JOHN CLOUSER, has advanced to general superintendent of that mine.

DAVE ARO, former resident engineer at the Gay Phosphate Mine, is now superintendent of the Centennial Phosphate Mine near Monida, Mont.

A former employee of Anaconda Mining Company, ROBERT HILL, has succeeded Mr. Aro as resident engineer of the Gay Phosphate Mine.

NORMAN LEHMAN has been employed by the firm as geologist at Fort Hall.

J. FRANKLIN THOMAS, 83, retired secretary-treasurer of Gravel Products Corp., Buffalo, N. Y., died on August 31 in a Buffalo hospital. He joined Gravel Products Corporation in 1930, and later was named treasurer. He became secretary-treasurer in 1940 and retained that post until 1957, when he retired.

JOHN V. VAN PELT III has been named controller of Vulcan Materials Company, Birmingham, Ala. He was formerly associated with the Kendall Company.

In addition, the board of directors appointed FRANK P. NYKIEL, executive vice-president and JOHN G. KELLY, controller of the Consumers Company Division, with headquarters in Chicago.

J. H. ASMANN, treasurer of the American Cement Corporation, Philadelphia, Pa., has been given the additional post of vice-president, and L. L. CONLEY, previously sales manager of the Riverside Division of the firm, has been promoted to vice-president-sales of that division.

"BEST BUY" for scaling BULK MATERIALS

Fast Automatic Accurate

Battery of Poidometers in Process Industry

WEIGHING • MIXING • PROPORTIONING
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are versatile machines that provide valuable weight-data, and boost production figures.

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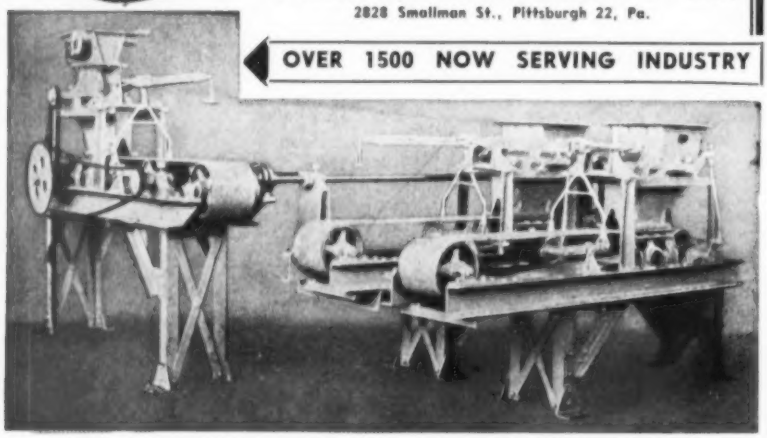

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SKF engineering solves major bearing problems

NEW SPHERICAL ROLLER BEARING SOLVES PROBLEMS OF HIGH LOADS, SPEEDS, AND ECCENTRICITIES IN VIBRATING SCREEN OPERATION

Vibrating screens give bearings a strenuous workout. They subject them to heavy loads, high speeds and eccentric motion.

To overcome these problems, SKF has developed a *new spherical roller bearing for vibrating screens in the mining, quarrying, chemical, steel and paper industries.*

New Series 4523 Screen Bearing

It's designed to—

1. PROVIDE GREATER LOAD-CARRYING CAPACITY. It gives an average rating increase of 37% and 2.85 times longer fatigue life than the original spherical roller bearing. These increases are obtained by utilizing longer rollers (Fig. 1), closer conformity of roller contour to ring contour.

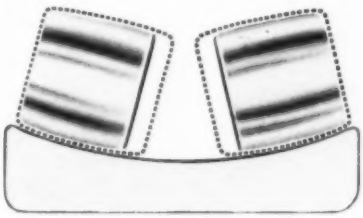

Fig. 1

2. OPERATE AT COMBINED HIGH ECCENTRICITY AND SPEED. This new bearing is equipped with a cage that withstands the stresses and wear caused by combined high operating speeds and by loads resulting from increased eccentric motion of the bearing.

So in this new bearing, SKF uses a cage made of centrifugally cast bronze having axially drilled and reamed pockets of a shape that conforms closely to the rollers' shape. Its spherical O.D. conforms to the contour of the outer ring sphere. It is symmetrical and made in one piece for dynamic stability. Thus, the cage is centered on large areas of contact located where effective lubrication is assured.

Centrifugally cast machined bronze cage

The new SKF Screen Bearings conform to 223 Series Spherical Roller Bearing dimensions. For details on the sizes available, call your nearest SKF sales office or authorized SKF distributor. Write for Bulletin 466—"Screen Bearings to Meet the Needs of Vibrating Screens."

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Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

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Obituaries

J. Lang

JOHN LANG, general merchandising manager, Building Products Division of The Ruberoid Company, died unexpectedly on July 7 at his home in Greenwich, Conn. He was 61 years old.

Mr. Lang spent more than 37 years in the building materials business. He joined The Ruberoid Company in 1939 as assistant sales manager of the New England district.

WILLIAM E. ERBEY, 64, chief mechanic for Consolidated Rock Products, Los Angeles, Calif., died recently.

KENNETH COOKE BROWNELL, 55, chairman of the board of American Smelting and Refining Company, died on August 7.

Mr. Brownell joined the firm in 1927. After spending several years in the ore purchasing and sales departments, he was elected vice-president in 1936, executive vice-president in 1947, and president in 1949. He became board chairman and chief executive officer in 1957.

E. M. NORRIS, former superintendent of Anaconda Copper Mining Company's phosphate mine and reduction plant at Conda, Idaho, died on May 5 at Chula Vista, Calif. Mr. Norris, who retired from mining in 1951, pioneered in the conversion of phosphate rock to fertilizer.

BEN A. THOMAS, former superintendent of the Cleveland Quarries Company, Berea, Ohio, died on July 13 in the Berea Community Hospital. He was superintendent at the quarry for 25 years, and had retired in 1946.

J. B. Roberts

JOHN BAKER ROBERTS, 79, long identified in the construction and aggregates industries, died at his home, Princess Anne, Md., August 6, after a long illness.

Mr. Roberts was one of the founders of the Southern Materials Corporation of Virginia, which was acquired by Southern Materials Company, Incorporated, in 1945. He was also instrumental in the founding of the Southern Lightweight Aggregate Corporation of Richmond and had been identified with banking, farming, timber and other interests. He was a founder of the Roberts Paving Company in 1923 with Henry W. Roberts, Henry James Brittingham Roberts, and A. V. Williams.

GEORGE A. LUNDAY, 69-year-old retired sales manager of Ideal Cement Company, Denver, Colo., died recently at Billings, Mont.

HOMER H. HINE, 84, a partner in the Salmon Bay Sand & Gravel Company, Seattle, Wash., died recently after a long illness. He was associated with the firm for more than 40 years.

HILARY CHRISTIAN SCHROEDER, treasurer of the San Antonio Portland Cement Company, San Antonio, Tex., for 40 years, died in New Orleans, La.

WILLIAM OLIVER KERR, a former executive of the Lehigh Portland Cement Company, died recently after suffering a heart attack at his farm near New Castle, Pa.

CLARENCE A. SANBORN, president of Casey Stone Company and vice-president and director of the Lehigh Stone Company died on May 26 at his home in Casey, Ill.

RAYMOND T. MACFARLAND, a former employee of the Kingston Trap Rock Company, Kingston, N. J., died August 8.

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the motors you can install and forget!

Because they're no ordinary motors—stators, rotors, windings, electrical varnishes, and bearings used are designed and selected to give you long, trouble-free service under the toughest conditions. Yet, BROOK MOTORS cost no more than ordinary motors —*usually cost less!* No wonder BROOK MOTORS are praised so highly throughout industry. NEMA Rerate (Open Drip Proof Shown) and Standard Frame Motors, 1 to 600 horsepower, available from warehouse stocks in principal cities. *Send for the cost-cutting facts today!*

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BROOK MOTOR CORPORATION

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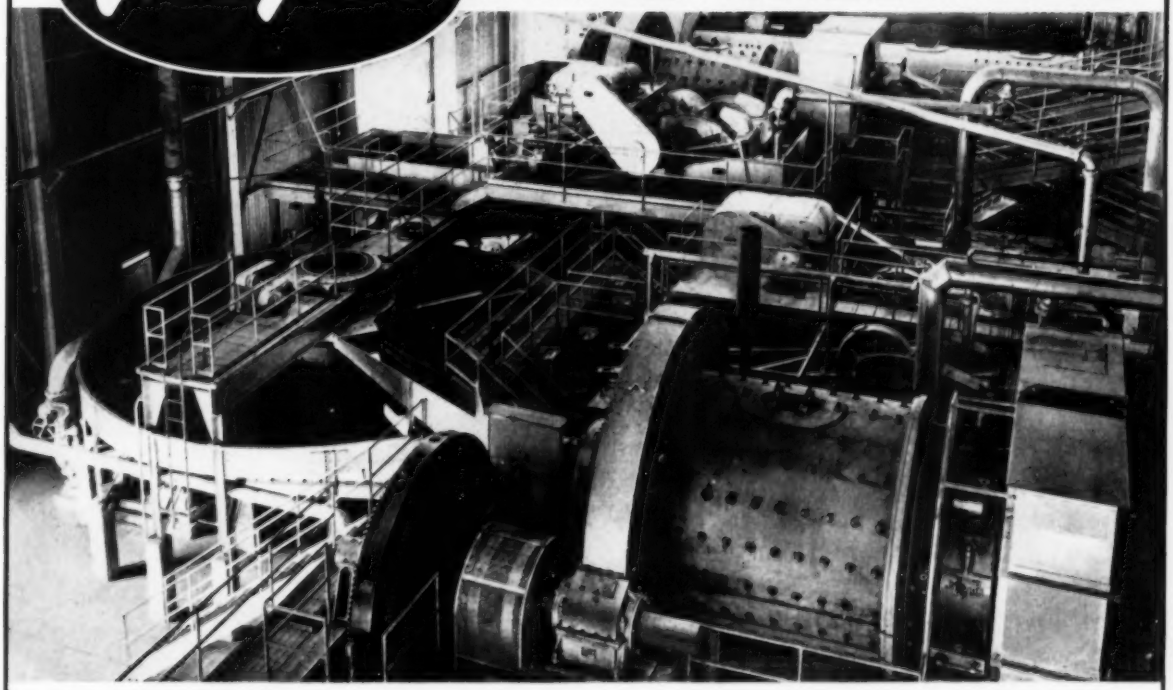
DEPENDABLE

Traylor-MADE BALL MILLS



Traylor Ball Mills are made in two general types—overflow and diaphragm discharge. They are designed and built to be used for either wet or dry grinding. Shells are of all welded steel construction. The trunnions are cast integrally with the detachable heads. Main bearings are made of Meehanite* metal, each fitted with a high pressure Alemite pump.

Driving gears are steel, precision cut on our Maag gear generator. Mills may be fitted with drum feeders, scoop feeders or a combination of the two.

Traylor-made Grinding Mills can be made in any size to meet any requirements. Write for bulletin No. 11-121 for information on Ball, Rod, Compartment and Tube Mills.

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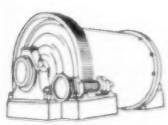
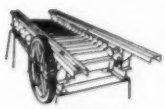


BALL MILLS

ROTARY KILNS

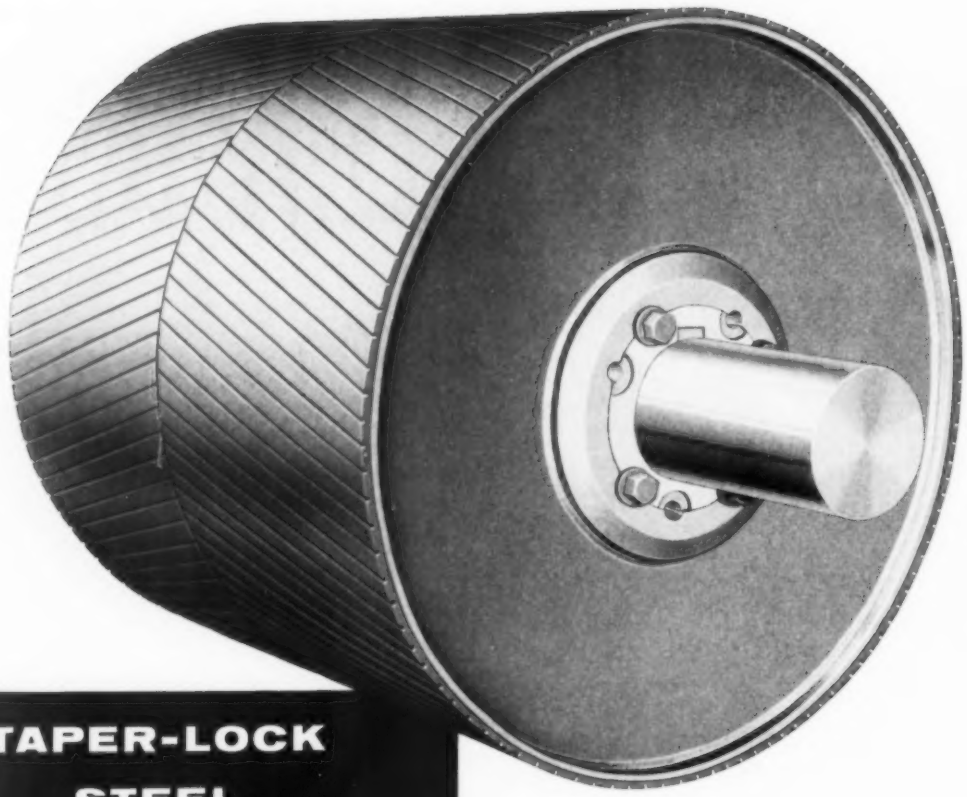


APRON FEEDERS

PRIMARY GYRATORY CRUSHERS

JAW CRUSHERS

SECONDARY GYRATORY CRUSHERS



TAPER-LOCK STEEL CONVEYOR PULLEYS

Maximum strength with minimum weight...

Unmatched holding power on the shaft...

New mounting simplicity.

The rims, discs and hubs of these modern conveyor pulleys are *steel*—and they are fused together into jointless drum construction for (1) maximum strength with minimum weight, (2) exclusion of dirt, water, steam, (3) terrific shock resistance.

With the patented Dodge Back-up Bar, welds of full rim thickness are achieved—and the ultimate in strength is assured by submerged arc process welds.

Taper-Lock Steel Conveyor Pulleys *hold*. Taper-Lock provides the equivalent of a shrunk-on fit—there is no "walking" on the shaft. Mounting and demounting are simple. Pulley and bushings mount as a unit. Alignment is easy. And the tapered bushing is wedged into place merely by turning the mounting screws. It is "unlocked" by using the mounting screws as jack screws.

Available in diameters from 6 inches to 8 feet—all face widths. Standard or special rubber lagging available. Ask your local Dodge Distributor—or write us for bulletin.

DODGE MANUFACTURING CORPORATION, 4000 Union, Mishawaka, Ind.

97 Taper-Lock Steel Conveyor Pulleys are used in this famous conveyor system engineered, manufactured and erected by Hewitt-Robins, Inc., at the Southern Pacific's causeway construction across the Great Salt Lake.

DODGE

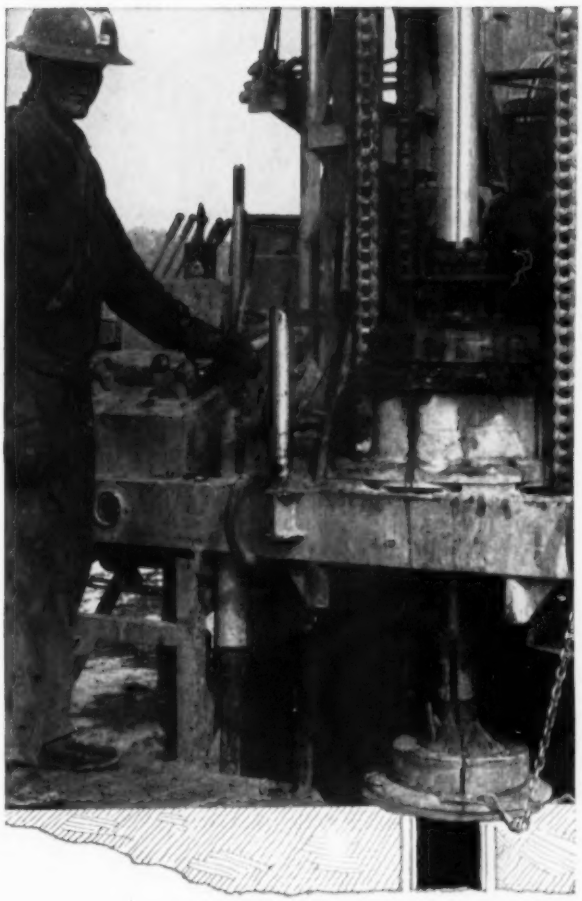
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

Rides with the bit through rock ...speeds big bore hole cuts...

GARDNER-DENVER "MOLE-DRIL"*

* TRADE-MARK



Here's added power for your rotary rig—hard-hitting, in-the-hole power. "Mole-Dril" speeds blast hole drilling in open rock cuts . . . and deep hole drilling in hardest rock.

It's easy to use—the "Mole-Dril" screws directly onto the bottom of standard drill pipe . . . a tungsten-carbide "X" bit screws directly onto drill tappet. That's all the "make-ready" it takes to send the "Mole-Dril" through rock.

It's powerful—"Mole-Dril" delivers more foot-pounds of energy to the bit than any other drill of its size. Every pound of hammer energy is transferred directly to the bit.

It's rugged—the "Mole-Dril" has only three moving parts, nine major parts. This simple, rugged construction gives the "Mole-Dril" lasting deep hole drilling durability.

Two models available:

Model AM4 for drilling $4\frac{3}{4}$" diameter hole.
Model AM6 for drilling $6\frac{1}{2}$" diameter hole.
Write for bulletin.

"Mole-Dril's" positive hole cleaning action

Air at full line pressure flows through drill's air blowing tube directly to bit . . . this direct air stream keeps cutting face clean regardless of drilling depth.

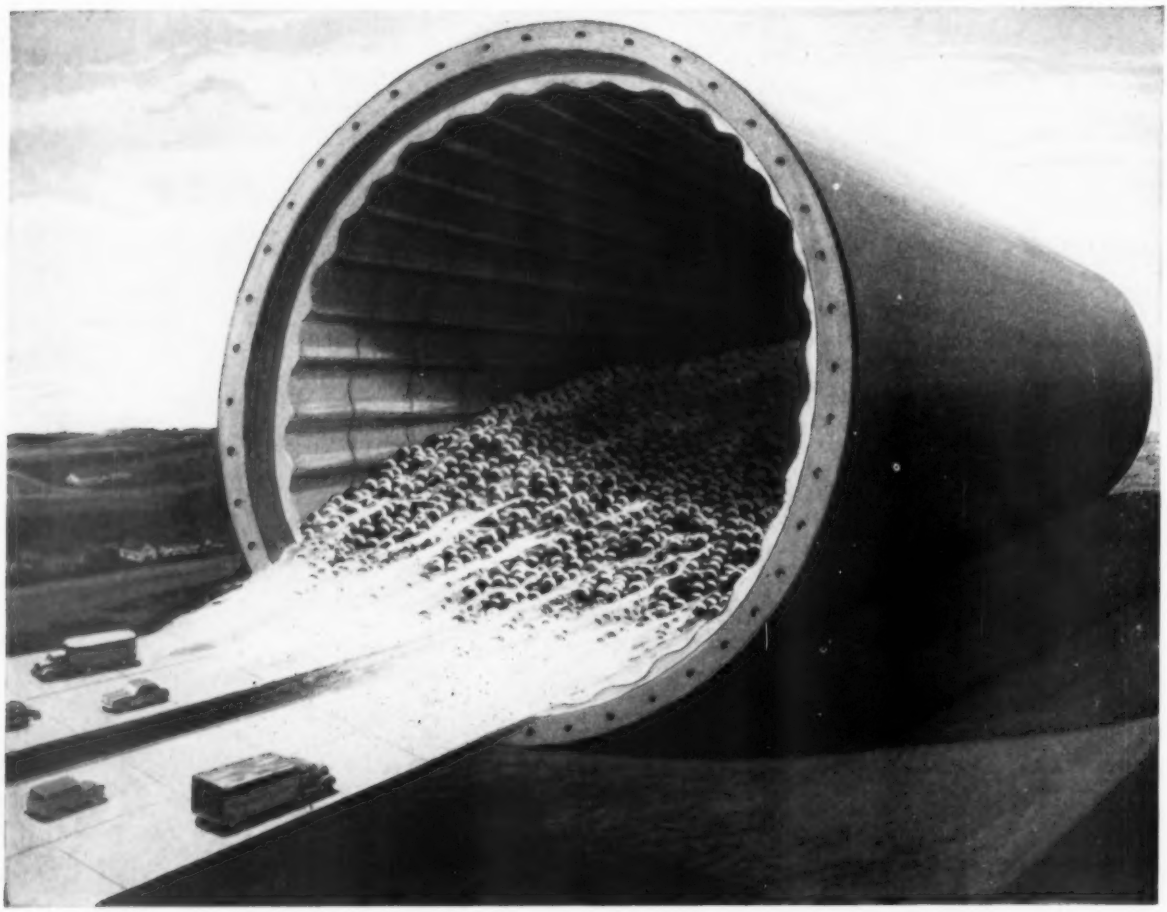
Drill exhaust air passes out up-cast air ports and gives cuttings an additional out-of-the-hole boost.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario



11,000 barrels of cement are necessary to construct a single mile of four-lane highway, reports Portland Cement Association.

Cement for new highways ...costs less when you use Ni-Hard Grinding Balls

Ni-Hard* grinding balls save money!

Records show that the majority of the nation's cement plants now grind clinker with these abrasion-resisting nickel-chromium white cast iron balls.

Long life cuts production costs

Users find that Ni-Hard balls give 3 to 5 times the life of other types in clinker mills. Naturally, this longer grinding life reduces "make-up requirements" as well as re-charging time and labor.

Try Ni-Hard balls in your own plant . . . see first-hand how they'll slash the cost of every barrel of cement you grind.

Get all the facts. Send for the 58-page booklet, *"Engineering Properties and Applications of Ni-Hard"*. Full of illustrations and service data, it's yours for the asking. With it, we'll send you a list of authorized producers of Ni-Hard castings. Write us now.

*Registered Trademark

INCO TRADE MARK **THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street New York 5, N. Y.

3 types

for every digging purpose

TYPE "LS" . . . *Lightweight*

A lighter weight bucket designed for levee and drainage work

TYPE "TS" *General Purpose*

Unexcelled for Medium-Duty Service

TYPE "HS" . . *Heavy Duty*

A heavy-duty bucket for moving shale, blasted rock and other hard formations

All HENDRIX Buckets available without perforations

¼ to 40 Cubic Yards

HENDRIX DRAGLINE BUCKETS

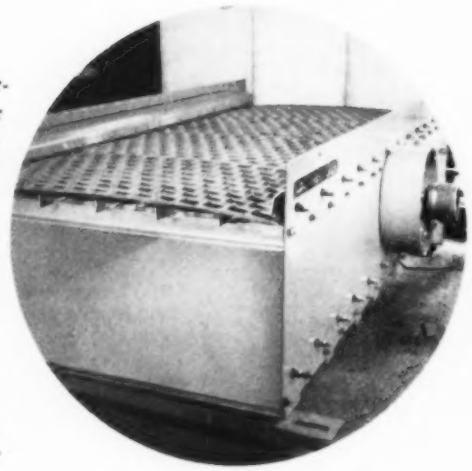
HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

ROLLING STONE CAN'T DENT THIS PLATE!

It's made with Hendrick H Quality Steel Hendrick H Quality Perforated Plate is made from high carbon or stainless steels. High carbon can be heat-treated after perforating for a longer life. This tough steel was carefully developed by Hendrick, after many years of experience in selecting and specifying the best analyses of steel for the aggregates industry.

In addition, Hendrick H Quality Perforated Plates assures uniformity in your product. Full clearance practically eliminates blinding. You get faster deck changes for



lowered labor costs. And the large, open area offers you maximum protection. Hendrick H Quality Steel Perforated Plate is available either flat, corrugated or stepped, in any desired shape and with perforations of any size. Write to find out more about this durable Perforated Plate.

Hendrick

Manufacturing Company

39 Dundaff Street • Carbondale, Pa.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Pan Steel Flooring • Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Column Internals

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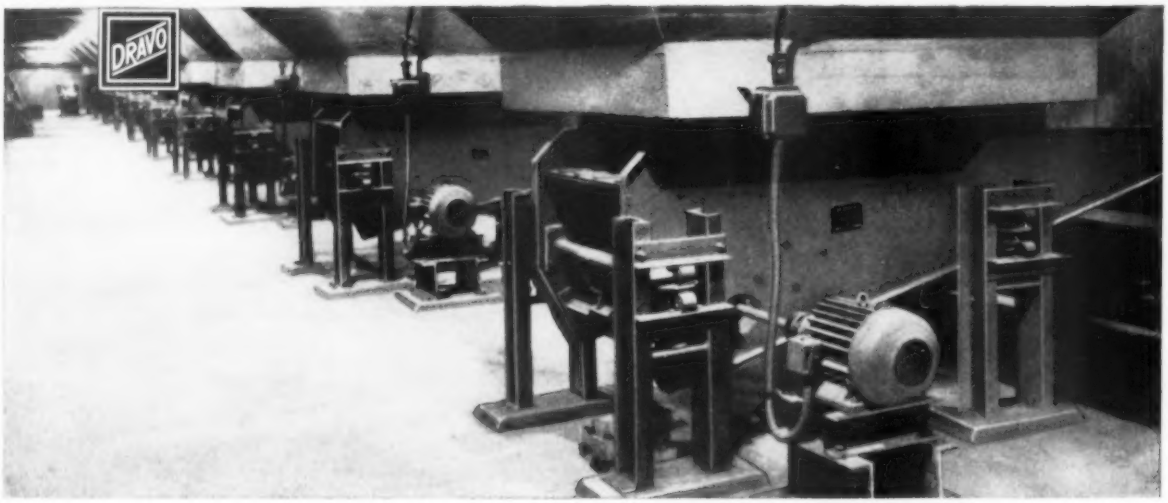

Low maintenance, economical operation with DRAVO-SCHENCK vibrating screens, conveyors, feeders

Low maintenance is the keynote of Dravo-Schenck equipment. In typical installations like the row of feeders shown here, repair and replacement is held to a minimum.

The reason for such economical operation is found in the precision design of the unique "Micro-Thrust" exciter unit which reduces wear by moving material with minimum contact with troughs or screens, and the rugged construction of all wearing parts.

These heavy duty screens, conveyors and feeders are at work in a wide variety of applications—handling ferrous and non-ferrous ores, sinter, chemicals, cement clinker, crushed stone, coal and other abrasive or hard-to-handle materials.

Our engineers will gladly work with you on specific problems or write for Bulletin No. 1475, Dravo Corporation, Pittsburgh 22, Penna.

DRAVO

CORPORATION

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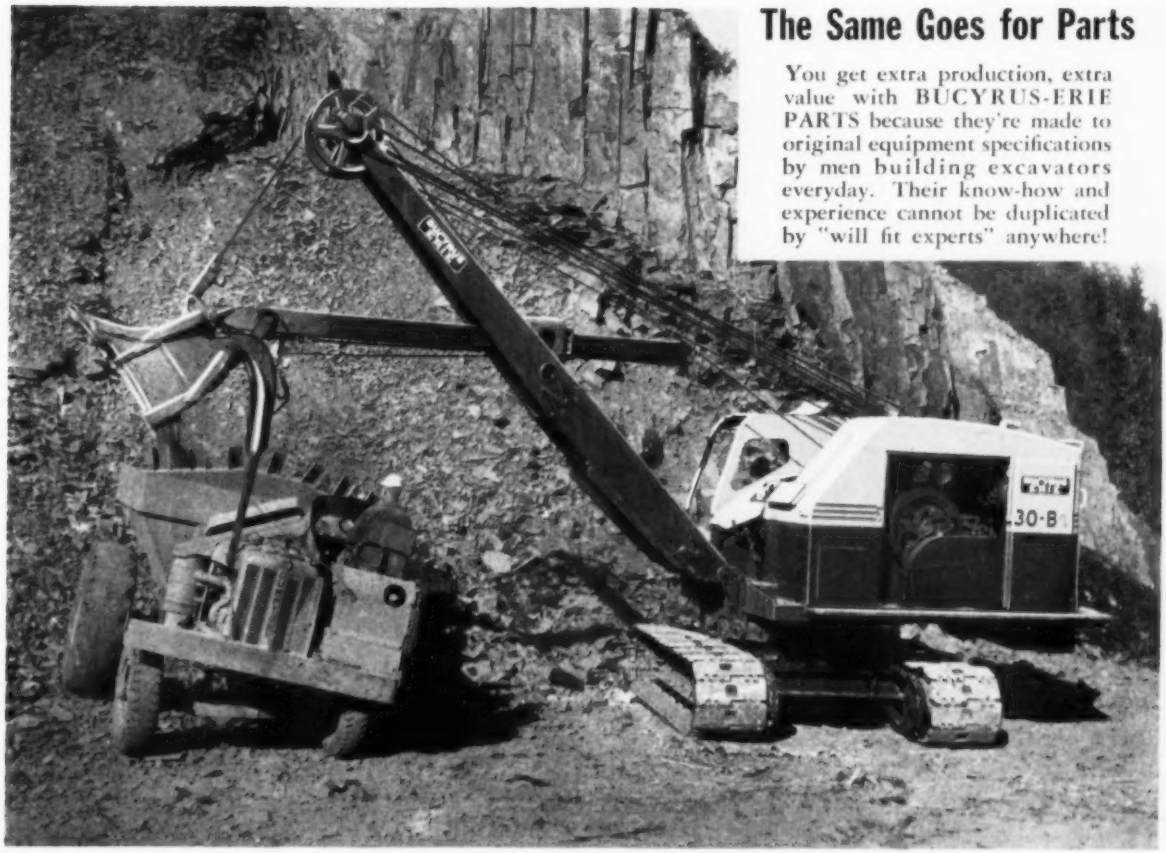
You get extra production, extra value with BUCYRUS-ERIES



The Same Goes for Parts

You get extra production, extra value with BUCYRUS-ERIE PARTS because they're made to original equipment specifications by men building excavators everyday. Their know-how and experience cannot be duplicated by "will fit experts" anywhere!

POWER flows smoothly from engine to front end, giving you extra muscle where it counts! Clutches and brakes stay even and true because they're self-adjusting for temperature changes during operation.

Weight of all machinery is distributed to give you coordinated dig-swing-dump stability that means fast cycles. Service is easy because every major assembly is readily accessible. Power is transmitted from engine to transmission shaft by a multiple-strand roller chain fully enclosed and running in oil. Routine lubrication is fast because most fittings are centrally located, easy to reach.

Bucyrus-Eries last longer as proved on thousands of jobs all over the country! They're worth more when you trade, too. Call your nearby distributor today and get details on the size you need to increase pit output . . . make more profit!

552E58

BUCYRUS ERIE

South Milwaukee, Wisconsin

MODERNIZE . . . to economize!

One-Man Loading for Box Cars & Trucks Is Now Possible in All Cement Plants

New Power-Curve Swivel Stacker & Loader Shoots Bags into Place, Replaces Slow Hand Truck

The Power-Curve Swivel Stacker and Loader at a large rock products company uses but one operator who merely guides bags a little with one hand as they stream into the car direct from the Packer. The single operator replaces a crew of four.

(Special)—The latest in bag loading techniques is now being demonstrated to cement plant operators who are fed up with the slow, old-fashioned hand wheel truck. A single conveyor-stacker system conveys the bags all the way from the packing machine and speeds up the loading, delivers cleaner, neater bags, reduces in-transit losses, and recovers spillage and loose material within the plant. The Power-Curve system is able to amortize its entire cost in less than a year.

In American and Canadian cement plants today there are in daily use 117 Power-Curve units, including 73 Packer and transfer conveyors, eleven bag flatteners and elevators, and 33 box car & truck loaders.

Virtually every cement producing area is represented in the list of Power-Curve owners, with new additions every month.

Backing up the news of the money saving new system is a network of Power-Curve representatives in all areas equipped with sound movies in color showing actual cement operations and the effortless loading of the new swivel stacker.

For complete details write the Cement Sales Division,

POWER-CURVE

CONVEYOR COMPANY

2185 SOUTH JASON ST., DENVER 23, COLORADO

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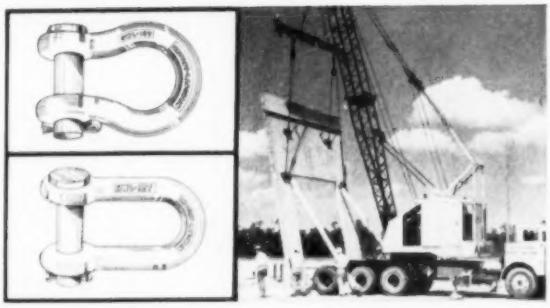
Load-Rated* DOES THE JOB!



Handling Tilt-Up Panels With Crosby-Laughlin *Load-Rated* Shackles

Crosby-Laughlin* LOAD RATED Shackles are demanded on jobs where safety is essential! "Takes the guesswork out of buying fittings" say users of the LOAD-RATED Line. Quality steel is drop forged—heat treated for toughness. *Order capacity* for the job—*see* guaranteed capacity stamped on LOAD-RATED Fittings! Safety is no accident when you order from the *world's most complete line* of drop forged fittings for wire rope and chain. Sold by construction, industrial and mill supply distributors. Ask for free catalog.

*Trademark

CROSBY-LAUGHLIN *Division*

AMERICAN HOIST & DERRICK COMPANY

FT. WAYNE, INDIANA

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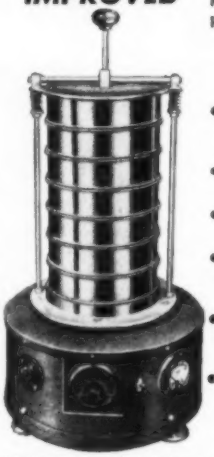
SYNTRON

TEST SIEVE SHAKERS

for faster, more accurate analysis of industrial materials

NEW, IMPROVED



The new, improved SYNTRON Test Sieve Shakers provide quick accurate separation of industrial materials with more positive control of components.

Featured improvements

- **Larger, more powerful electromagnetic drive**
- **Rheostat voltage control**
- **Reset timer for accurate time testing**
- **Voltmeter to obtain comparable tests under identical conditions**
- **Holds six standard 8-inch test sieves and bottom pan**
- **Operates from 115 volt, 60 cycle a-c.**

Write for complete information on SYNTRON Test Sieve Shakers — TS0258

SYNTRON COMPANY

385 Carson Avenue — Homer City, Penna.

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MECHANICAL AIR SEPARATOR

WITH
DOUBLE WHIZZER
AND
ADVANCED FEATURES

Improved in

- **Construction**
- **Operation**
- **Control**

RAYMOND MECHANICAL AIR SEPARATOR

Showing interior details of fan blades, whizzers and damper slides

RAYMOND Equipment maintains its lead by constant progress in design.

This latest version of the Whizzer Air Separator includes some recent improvements that add to its efficiency and widen its use in the nonmetallics industry.

- Large fan for increased capacity from separator.
- Increased size of beam sections of supporting frame gives greater stability.
- Improved lubrication system insures low cost maintenance and operation.
- Vertical slide dampers of new design for even wider range fineness control externally without shutting down.
- Option of direct motor drive, or speed reducer, as desired.
- Special connections and internal air distribution system for maximum drying efficiency on raw mix and cooling of finished cement.

For top performance and record low cost in classifying cement, lime, gypsum and other nonmetallic minerals . . . specify the Raymond Whizzer Air Separator.

Write for
RAYMOND Catalog No. 76

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Raymond Division

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CHICAGO 22, ILLINOIS

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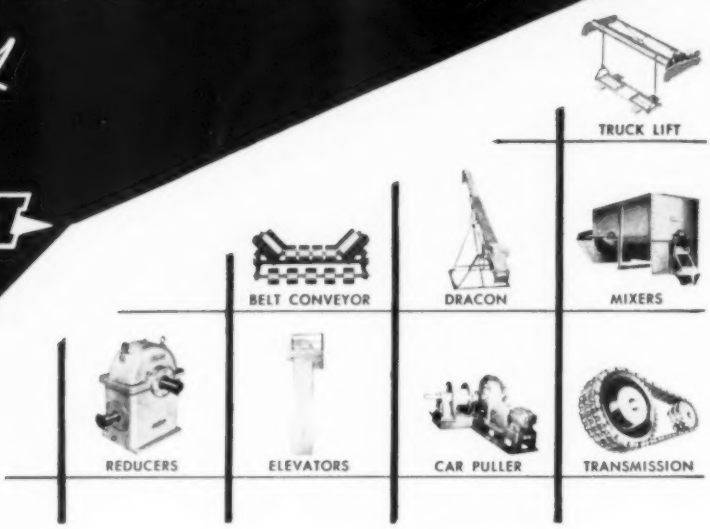
Combustion Engineering-Superheater Ltd., Montreal, Canada

FOR EFFICIENT HANDLING OF MATERIAL

Specify

THE EHRSAM INDUSTRIAL LINE



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Cross HEXCREEN marks the apex of sizing efficiency

CROSS Hexcreen provides superior sizing performance with high accuracy and big output. Hexcreen's one-piece rigid units feature low installation cost—less blinding—maximum rigidity and long life.

Look for this stamp on all "Cross" Products

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the sign of PLUS QUALITY for PLUS PERFORMANCE.

Write TODAY for complete information

CROSS Perforated Steel Segments, Sections, Decks and Parts for VIBRATING — SHAKING — REVOLVING SCREENS. *Services of Cross Field Engineer and Technical Data on Request.*

CROSS ENGINEERING COMPANY

Established 1901

Manufacturing Plant & Offices: CARBONDALE, PENNSYLVANIA

Service Agencies in Principal Cities: NEW YORK: 101 Park Avenue; MIAMI: Dupont Plaza Center

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FIRST IN THE FIELD

GYROSET SCREENS

for superior performance

SIZING, SLURRY SCALPING, WASHING, DEWATERING

Profit-Producing GYROSET Advantages

- Positive eccentric action
- Positive stroke adjustment
- Only 2 bearings
- Heavy structural shaft housing

GYROSET positive eccentric action gives full circle throw over entire screen surface.

GYROSET Screens operate at any degree of pitch (or slope). Stroke adjustable from 0 to 3/8". Simply but ruggedly built for heaviest service. Sizes: 36" to 72" wide, 4' to 16' long, 1 to 3 decks.

Write for information

Productive Equipment Corp. 2924 W. Lake St. Chicago 12

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THOSE WHO are in the **KNOW** own and operate

HENRY

TRACTOR SHOVELS
TRACTOR FORK LIFTS
LOADERS
BACKHOES

HENRY

MANUFACTURING COMPANY, INC.

TOPEKA, KANSAS

YOU CAN DO IT BETTER WITH A HENRY

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Allis-Chalmers saves you money

DO MORE POWER

3 ways

Provides maximum work per operating dollar—Allis-Chalmers engines give you real *Do-More Power* — with high torque, efficient combustion that squeezes the last bit of energy from every bit of fuel.

Keeps working day after day—There is unusual performance in rugged Allis-Chalmers engines — there is less wear, less that can go wrong.

Gets back to work faster — Design simplicity means easier servicing, too. Allis-Chalmers diesel engines are back to work quickly because you are close to fast parts and service, wherever you are.

See your Allis-Chalmers dealer for full information on engines that save you money, 9 to 516 hp, any fuel, any application. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Koehring Model 205 ½-yd shovel with Allis-Chalmers 273 engine loading copper ore at Tejano Mining Company in New Mexico.

BC-17A

Imagine . . .

only 57c per month per dryer furnace for refractory upkeep

The Plibrico Story

at

SNIVELY GROVES, INC.

After 4 seasons of service . . . 7 months per season . . . 5 citrus feed dryer furnaces were repaired for a total of just $79.23 including labor and material.

That low maintenance is due to each having had a complete Plibrico plastic refractory lining as illustrated. See how the lining is all one piece even around the many tempering air inlets. No costly special shapes here; just a continuous joint-free lining securely anchored to resist vibration, formed with Plibrico Super in the firing head to easily meet severe conditions, and Plibrico Standard for the balance. With our Air-Bond feature, both grades have "deep strength".

You can enjoy the advantages a Plibrico lining offers. See how by writing today for our catalog covering linings for calcining, drying, and processing furnaces.

Plibrico REFRACTORIES ENGINEERING CONSTRUCTION

PLIBRICO COMPANY • CHICAGO 14, ILL.

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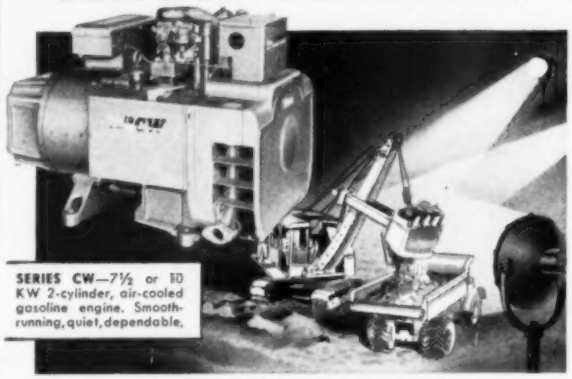
ELECTRIC PLANT **NEWS**



SERIES CW—7½ or 10 KW 2-cylinder, air-cooled gasoline engine. Smooth-running, quiet, dependable.

Large-area floodlighting steps up safety, efficiency

High capacity, easily portable Onan Electric Plants give you big advantages for night lighting pit operations. Easily moved from job to job and from place to place on the site itself, Onan portable units have the capacity to light not only the work face, but approaches, job offices, ramps and dumps. Can be used to power motor-driven equipment and communications too. *Air-cooled models from 500 to 10,000 watts. Water-cooled 10 to 75 KW. Air-cooled Diesel electric plants: 3,000 and 5,000 watts.*

Write for Folder of Portable Models

D. W. ONAN & SONS INC.

3562A University Ave. S. E., Minneapolis 14, Minnesota

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YOU CAN BUY OR SELL IT BETTER THAN ANYWHERE ELSE IN PIT & QUARRY'S

Broadcast Section

See Pages 205-213

NOW...

...higher capacity wet screening in the 8-100 mesh range with

The Dorr-Oliver DSM Screen

For more information on this newest tool for the mining industries, write for a copy of Bulletin No. 2300. Dorr-Oliver Incorporated, Stamford, Conn.

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WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

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PRODUCER

The Wemco-Remer Jig:

A Big Difference — Designed Specifically for the Aggregate Field

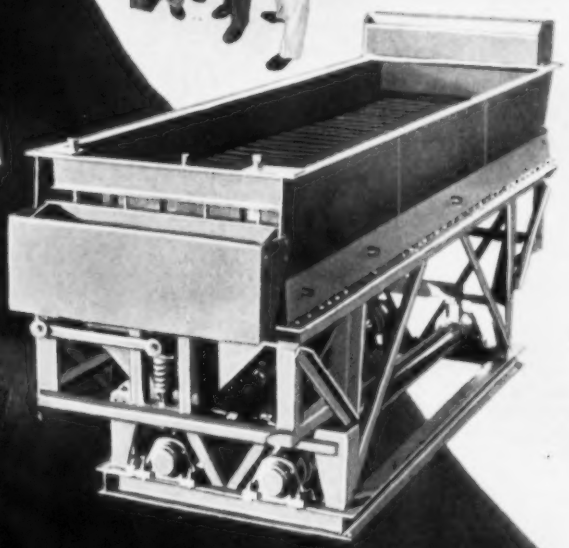
The distinction is in its standout *method* of removing objectionable materials to meet the most rigid specifications.

Many deposits, formerly unusable because of coal, shale and other light weight particles, are today profitably operated with Wemco-Remer Jigs on the job.

The reason: exclusive Wemco-Remer Differential Acceleration — a combination of a conventional jig stroke with a high frequency stroke — and other features developed *by* operators *for* operators — to consistently answer the *extra* tough problems.

Get all the facts on the *big difference* of the Wemco-Remer Jig!

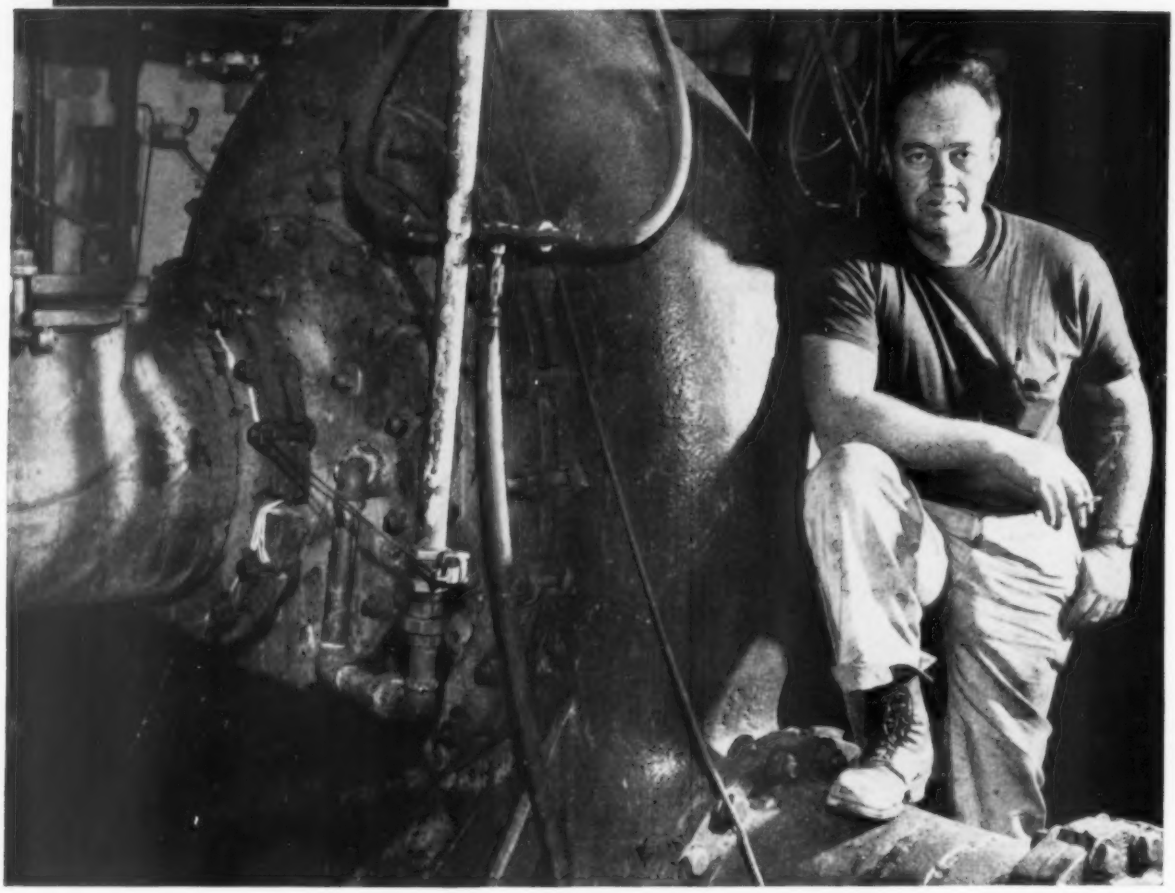
Depend on the Wemco-Remer Jig — and the skills behind it.



WEMCO®

Western Machinery Company
650 Fifth St. • San Francisco, California
and throughout the world

Amsco pump application file —Portland, Oregon



"Amsco HC-250 pump liners outlast any we previously used by 3 to 1..."

Says Mr. Arthur A. Riedel, Jr., President and General Manager of the Willamette Tug and Barge Co., Portland, Oregon, which engages in all types of marine construction including suction dredging, bucket dredging, bridge, dock and levee construction, towing, barging, and the processing of sand, gravel and ready-mixed concrete.

"We'd get about two weeks life out of our old suction liners. With the abrasion resistance of Amsco HC-250 we get at least six weeks.

"We are presently channel-dredging sand and gravel at Hood River, Ore. with this 16-inch Amsco. Last year we dredged 3½ million cubic yards. A pump shell lasts about 600,000 yards before we rebuild it (by welding). The bearings stand up a year and a half.

"The pump is three years old. It has a GM diesel drive, flexible coupling. Our dredge has both plain suction and a rotary cutter. The lift varies up to 30 feet, the longest pipeline the pump has been on was 6200 feet.

"We're happy with this pump, but what we like best is the service, the fast parts delivery Amsco gives us. We depend on it."

Amsco® Dredge Pump standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. An Amsco pump engineer will be glad to discuss your requirements, or write for Bulletin 1052P containing full information and specifications on the Amsco line.

AMERICAN Brake Shoe COMPANY

AMSCO American Manganese Steel Division
Chicago Heights, Illinois

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$10.50 per column inch. Lower rates for larger space used and/or on a contract basis.

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PAN CONVEYORS—24" x 18'—30" x 33' —36" x 54'

GRIZZLY ROLLS—Steel frame contains 6 live rollers 12" dia. x 36"

SEPARATOR—Dings Magnetic complete with rectifier and electromagnet. 18" main belt with three crossbelts.

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Electrically Powered
40' Mast — 7⅞" Hole
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Position available for person experienced as Chief Chemist in Portland Cement manufacture. Southwest U.S. location. National company. Send complete resume of experience and training to:

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Ph. FR. 2-4186

Construction
Design
Operation
Plant Layout
Appraisals

MILLS

ROD, Marcy 7' x 15', 4" liners, 300 HP

ROD, Marcy 8' x 12', "epd." new liners

ROD, Kennedy V-S, 5' x 10'

ROD, Denver, 4' x 10', 100 HP

BALL-TUBE, Allis-Ch. 5'6" x 22', 150 HP

BALL-TUBE, Allis-Ch. 6' x 16'

BALL, Marcy #66, 64½, 125 HP

HAMMERMILL, Penna. Crusher #5060, 400 HP, non-clog, 1952, unused

CONICAL BALL, Hardinge 4'6" x 16", 25 HP, w/bucket elevator, screens, feeders, etc.

CONICAL, Hardinge 10' x 48", 8' x 36"

COMPEB, Allis-Ch. 7' x 24', 450 HP

DRYERS-KILNS

8' x 170' kiln, ¾" shell, (3) tires

11' x 155' brick-lined kiln, NEW

8' x 115' brick-lined kiln, ½" shell

7' x 120' brick-lined kiln, 9/16" shell

8'8" x 70' Double-shell, Hardinge #XA-18, indirect-direct dryer, ½" shell

7' x 80' Vulcan stone dryers

5'6" x 50' Renneberg, ⅜" shell

5'6" x 31', 4'8" x 33', ½" shell

6' x 50' Louisville steam-tube dryers

6' x 30' Louisville steam-tube dryers

6' x 24' rotary dryer, ⅜" shell

4'6" x 40', 4'6" x 32', ⅜" shell dryers

4' x 24' brick-lined rotary kiln

CRUSHERS

GYRATORY, Kennedy #49S, 38½, 37½, 19½, 14

DOUBLE ROLL, 24" x 24" smooth roll, 20 HP, 1954 (like new)

CONE, Symons 7', 3'

JAW, 18" x 9", 8" x 10"

ROLLER, Raymond #15, 6-roll, 66" dia., 200 HP, low-side

ROLLER, Raymond #5057, 5-roll, hi-side

PULV., B & W Type E-32, 75 HP

RING ROLL, Sturtevant, 14" x 9½", 40 HP

SAWTOOTH, Robinson #13, 15 HP

MISCELLANEOUS

BOILERS, Keeler 200 HP, 160 PSI

CONVEYOR, 16" & 24" trough rubber-belt, 500' long (all-steel)

BRIQUETTING PRESSES, Komarek-GREAVES 75, 50, 10 HP

BUCKET ELEVATORS, 62' & 90' c-c

SCREENS, 4' x 6', 4' x 8', 3' x 10'

PUG MILLS, 150, 50, 25 HP

COMPRESSOR, Gas turbine, 21,500 cfm Pos. Disp.

APRON FEEDERS, 36" & 48" wide

STORAGE BINS, welded steel, conical bottom, 6,000-80,000 gal.

BUCKETS, ¾ yard clam-shell

PERRY EQUIPMENT CORPORATION

1414 N. Sixth St. Phila. 22, Pa.

POplar 3-3505

MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE

NUSSBAUM ELECTRIC CO.

220 E. Douglas Avenue Fort Wayne, Ind.

FOR SALE

100 HP GE Motor 550 Volt 3 PH 60 CYC, also 1 yd. Manitow for parts Serial #168.

Walken Sand & Gravel Co.

522 N. Front St. Niles, Michigan

Ph: MO 3-4284

NEED A PIPELINE?

Three inch and larger diameter line pipe available for rent, sale, or lease-purchase. Pipe can be furnished coated and wrapped if desired. Immediate delivery anywhere.

PIPE RENTAL & SUPPLY COMPANY

P. O. Box 1671 Phoenix, Arizona

FOR SALE

Sturtevant #1 Ring Roll Mill
Sturtevant #2 Ring Roll Mill
Sturtevant 20x14 Rolls
Sturtevant 5x10 Jaw Crushers

J. H. PERKOSKI

Investment Building
Pittsburgh 22, Penna.

FOR SALE

Hardinge Conical Ball Mills, 4½' x 16", 5' x 22"; Kiln, 2' x 18' Gas Fired, Brick lined; Patterson 40" x 60" 2-Deck Screen, Raymond Imp Mill #40, Oliver Vac Filter 3' x 6' Type 316 S.S. Micro—1 SH-SS.

PROCESS PLANTS SERVICE, INC.

287 Central Ave., Clark, N. J.
Phone, Fulton 1-1103-4

FOR SALE

One Used Model MR No. 40—16 x 28 Day Pulverizer, s/n 7238. Excellent Condition with Six Groove (c) 20 PD Sheave on Skid Frame With Motor Mount, Less Motor. New Grate Bars, Hammers and Breaker Plates.

FOB Our Yard Nashville, Tennessee $1,250.00

EUCLID-TENNESSEE, INC.

P.O. Box 1176 Nashville, Tennessee

FOR SALE

Glass batch mixing drums and parts for sale. One unused T. L. Smith mixing drum of 40 cu. ft. capacity and one T. L. Smith mixing drum of 28 cu. ft. capacity available. Also available are a number of spare parts.

FOR FURTHER INFORMATION
WRITE H. L. HAYS,
Purchasing Agent,
OWENS-CORNING FIBERGLAS CORPORATION,
NEWARK, OHIO.

FOR SALE

1 Kent Ring-Roll type #7 Maxecon Mill, with 6 inch double V feeder including 40 H. P. Motor and 50.0 x C sheave, V belt drive. Mill in good condition and can be inspected at Manufacturing Plant in Philadelphia.

BOTFIELD REFRACTORIES CO.

Swanson & Clymer Sts. Philadelphia 47, Pa.

SPECIALS: #2 Simpson Mixer, 3x8 & 42"x 12' Apron, Syntron F55 Feeders, 2036 Port. Crushing Plant. 15 & 30 ton Loco. Cranes.

CRUSHERS: 1024, 1536, 2036, 2436, 3042 all RB; 2836, 3042, 3648, 4042, 4249 4860 blake JAW, 13R 25R, 32R, 28", 36", 48" Telsmith. 1'8", 2'4" 2'6" & 4' Traylor, 10, 16, 20, 36" McCully, 12K & 322 Allis GYR. 2, 3, 4, 5½' CONES.

8'x 48" Scrubber Eagle 24x25 sgl. Screw

DRYERS: 3x20, 4x30, 5½x24, 5x40, 8x70, 10x18.

KILNS: 6x60, 7x120, 8x115, 8x124, 8x9x100.

CONVEYORS: 24x90, 24x290, 36x151, 42x160, 60x170.

MILLS: 4½x16", 6x18", 7x36" Hardinge, 6x15 Ball. Raymond 66", Sturtevant #1 Ring Roll.

300 HP WSM Hoist. Also Cableways 3/4-2½ yd. 200KW, 300KW, 435KW & 938KW Diesel GEN. SETS.

SHOVELS: P&H 655B, 1055, 620W, NW70, Koehring 1005, Mich 12B, Marion 40A, 492.

MID-CONTINENT EQUIPMENT CO., INC.

8321 Gannon St. Louis 24, Mo. Wydown 1-2826

CLASSIFIERS: 2—Akins and two Wemco 78" double pitch, duplex, 36 ft. steel tanks, complete with motor, drive, etc., New 1956, condition guaranteed. One Dorr 19' x 8' x 37'6" Bowl & Rake Classifier, complete with motor and controls, New 1956, condition guaranteed.

HEAVY MEDIA PACKAGE UNIT: Semi-portable, bolted construction, capacity 30 TPH, complete with 7 ft. Cone, Densifier, Pumps, Magnetic Separators, Rectifier, Controls, etc. Condition guaranteed. New 1956.

PULVERIZER: Marcy 8' x 12' Rod Mill, center peripheral discharge, complete with 350 H.P. motor, speed reducer, etc. New 1955. Condition guaranteed.

JAW CRUSHERS: Buchanan 36 x 48" type C, with motor and V-belt drive. Pioneer 24 x 36" with motor and drive. Other sizes 4 x 8" to 48 x 60".

REDUCTION CRUSHERS: Nordberg 4¼ ft. Cone with 200 H.P. motor. Nordberg Gyradisc 54" with 200 H.P. motor.

AIR SEPARATORS: 5 ft., 10 ft. and 14 ft.

CARS: 10 yd. capacity Phoenix, standard gauge, heavy duty, quarry type, automatic couplers.

DRYERS, KILNS, COOLERS: Two 8' x 125' Kilns. One 9' x 130' Kiln. One 10' x 200' Kiln. One 104" x 65' Dryer. One 104" x 70' Dryer. One 5' x 50' Dryer. One 3' x 27' Dryer. One 90" x 55' Dryer. One 6' x 50' Cooler. One 5' x 50' and one 5' x 60' Coolers.

SHOVELS: Bucyrus Erie 54-B Electric, 2200 volt, 3 phase, 60 cycle, 2½ yd. dipper, offered with or without dragline equipment.

TRUCK CRANES: 4—20-25 ton steel erector's Cranes. 1955, 1956 and 1957 models.

NEW SCREW CONVEYORS: 10—9" with 2 H.P. gearhead motors. UNUSED.

COMPLETE PULVERIZING PLANT with drying, air separating, dust collecting equipment, and screw feeders, boot bucket elevator, etc. with motor and drives.

LOCOMOTIVES: 4—G.E. and G.M., 80 tons and 90 tons, new 1956, condition like new.

BELT CONVEYOR: 18" x 60 ft. with steel support, all mechanical parts, motor and drive.

MINER: Joy continuous Miner model 3 JCM-4, height 34", width 90", capacity 2 to 4 tons per minute, 440 volt, A.C. Condition like new.

WE BUY AND SELL EQUIPMENT
THROUGHOUT
NORTH AND CENTRAL AMERICA

A. J. O'NEILL

Lansdowne Theatre Building
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WANT TO BUY

Rotary Kilns & Dryers - Portable Crushers
Diesel & Gas Locomotives
Air Compressors & Derricks
Cone, Jaw & Gyratory Crushers

DARIEN CORP.

60 E. 42d St., N. Y. 17, N. Y.

POWER EQUIPMENT CO.
Offers
BARGAIN PRICES ON
GUARANTEED
NEW and Rebuilt MOTORS!

OCTOBER SPECIALS

GUARANTEED REBUILT MOTORS
220/440 V. 60 Cycle—3 Phase

HP	MAKE	TYPE	SPEED
400	WestSB-Open	CS	900
300	WestSB-Open	CS	720
300	WestSB-Open	CS-1002	600

Send for our FREE Catalog

Cash for your surplus new & used electric equipment. Send your list today.

Large line of motors, control equipment, AC & DC Generators, MG sets and transformers.

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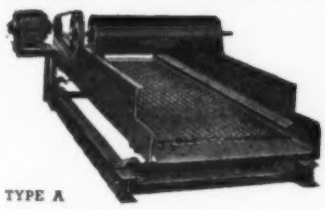
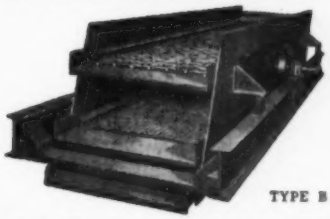
NEW CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED ® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS



TYPE A



TYPE B

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086. #1086.**

Model Number	Screening Area	No. of Decks	Sale Price
124A	2'x4'	1	$ 449
224A	2'x4'	2	472
126A	2'x6'	1	472
226A	2'x6'	2	501
134A	3'x4'	1	504
234A	3'x4'	2	570
136A	3'x6'	1	581
236A	3'x6'	2	688
336A	3'x6'	3	956
138A	3'x8'	1	675
238A	3'x8'	2	815
338A	3'x8'	3	996

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14'. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

Model Number	Screening Area	No. of Decks	Sale Price
336B	3'x6'	3	$1620
436B	3'x6'	4	1685
138B	3'x8'	1	1510
238B	3'x8'	2	1620
338B	3'x8'	3	1735
248B	4'x8'	2	2310
348B	4'x8'	3	2440
2410B	4'x10'	2	2400
3410B	4'x10'	3	2550
2412B	4'x12'	2	2590
3412B	4'x12'	3	2970
4412B	4'x12'	4	3165

BONDED ® TROUGHING IDLER CONVEYOR BARGAINS

CONVEYOR PRICES INCLUDE BELTING

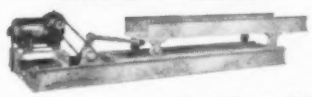
Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2 7/16" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. **WRITE FOR BULLETIN #1138.**

Bonded troughing idler conveyors also available in Truss Frame Construction. **WRITE FOR BULLETIN #1189 AND PRICES.**

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Foot
14"	25'	$1397	$ 722	
14"	50'	2222	1144	$16.84
14"	85'	3377	1733	
16"	20'	1262	636	
16"	45'	2137	1088	18.04
16"	60'	2662	1359	
16"	90'	3712	1900	
18"	25'	1477	794	
18"	45'	2217	1166	
18"	70'	3142	1648	19.24
18"	85'	3697	1933	
18"	100'	4252	2220	
18"	130'	5362	2797	
20"	25'	1517	828	
20"	60'	2882	1533	20.37
20"	75'	3467	1838	
20"	90'	4052	2145	
24"	25'	1590	898	
24"	45'	2430	1330	
24"	70'	3480	1875	21.78
24"	100'	4740	2514	
24"	120'	5580	2950	
24"	150'	6840	3603	
30"	50'	2911	1617	
30"	70'	3871	2119	24.75
30"	90'	4831	2614	
36"	25'	1818	1118	
36"	45'	2858	1678	27.95
36"	60'	3638	2096	
36"	100'	5718	3214	

BONDED ® FEEDERS



Capacities to 60 TPH

Bonded EF Series Economy Feeders are ideal for confined spaces and in portable plants. For medium duty service. Available with or without hoppers. **Priced from $224.00**

Bonded HDF-18 Heavy Duty Feeders were especially designed for abrasive materials such as Ore, Rock, Crushed Stone, Gravel, Sand, Clinkers, Abrasive Volcanic Ash and Rock Abrasion Resistant Alloy Steel Plate is used for all parts that contact the material. Capacities to 440 Tons Per Hour.

HDF Series Plate Feeder - Priced From $925.00
WRITE FOR BULLETIN No. 1211

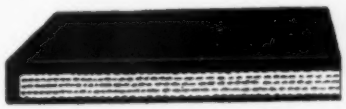
BONDED BUCKET ELEVATORS

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models mean lower prices and you get a Custom Built Elevator at no extra cost. There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular slivery, or pellet shapes, hot or chemically active. A complete line of Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices.

WRITE FOR BULLETIN #1203 AND COMPLETE PRICES.

NEW CONVEYOR BELTING AT NEW LOW PRICES SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



Quality Tested Conveyor Belting*

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile. Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	$3.63	$2.63
16"	4	4.08	2.77
18"	4	4.51	3.06
20"	4	4.97	3.54
24"	4	5.85	3.97
30"	4	7.18	4.85
36"	4	8.51	5.76

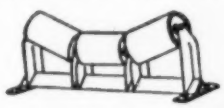
Major Bee Brand: 16# to 19# Average Friction Pull, 2500# to 3000# Average Cover Tensile. Skim coat between plies. A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	$4.31	$2.85
16"	4	4.85	3.22
18"	4	5.39	3.57
20"	4	5.90	4.07
24"	4	6.94	4.60
30"	4	8.53	5.66
36"	4	10.09	6.84
24"	5	8.14	5.38

***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, plies, duck weights and cover thickness available at low prices. **WRITE FOR FREE SAMPLE AND BULLETIN #1208.**

IDLERS AND RETURN ROLLS SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:

14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:

14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	8.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1138.**

BONDED SCALE AND MACHINE COMPANY

PHONE Days: Hickory 4-2186 — **WRITE FOR FREE CATALOG AND PRICES** — **PHONE Evenings: AX. 1-2213, HU. 6-3156**

110 BELLEVUE — **Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders** — **COLUMBUS 7, OHIO**

QUARRY EQUIPMENT

Cedarapids 3042 double impeller. Rebuilt.
Cedarapids 3063 hammermill with new components.
Cedarapids 2033 hammermill secondary plant on rubber.
Cedarapids 1236 twin jaw crusher. Excellent.
Cedarapids 1236 twin jaw portable plant.
Telsmith 13B gyratory crusher.
Scott-Iale model 63 double roll coal crusher.
96"x8'4" apron feeder with drive.
Robins 4' x 9' triple deck screen.
New Holland 4' x 12' double deck screen. Rebuilt.
Pioneer 4' x 8' double deck screen. Rebuilt.
27½ ton, single-compartment 8' x 12' bin.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two-compartment, 13' x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conv. belting

SHOVELS AND CRANES

P&H 855B-LC 2-yd. diesel dragline.
P&H 655B 1½ yd. diesel dragline. Reconditioned.
Lorain L-79, 1½-yd. diesel shovel. Rebuilt.
Bay City 65, 1¼-yd. diesel crane, 55' boom.
Lorain L-25K, ¾-yd. gas clamshell.
Lorain L-41 ¾-yard diesel backhoe. Reconditioned.
Lima 34 Paymaster ¾-yard diesel shovel. Good.
Unit 1020 ¾-yd. diesel powered shovel-crane.
Lorain TL25S ¾-yard gas clam-crane.
Koehring 304 ¾-yd. diesel shovel.
Koehring 304 ¾-yd. diesel backhoe.
Lorain MC-414 20-ton Moto-Crane. Reconditioned.
Wayne 50B, 25-ton truck crane. 18 mos. old.
Link Belt HC-90 25-ton truck crane.
Lorain MC-504W 25-ton Moto-Crane.
Lorain MC-425W 25-ton motorcrane. New condition.
Lorain MC-4 15-ton Moto-Crane.
Lorain TL-20 10-ton gas Moto-Crane.
Lorain SP-107, 7-ton self-propelled crane.
Michigan TM16, 10-ton gas truck crane.

TRACTORS, TRUCKS, SCRAPERS, ETC.

2—Euclid TS-18 twin engine scrapers.
2—Euclid 18-yd. overhung engine scrapers.
2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
6—Euclid 15½-yd. six wheel scrapers.
2—Euclid 13-yd. bottom dumps. Good.
1—Euclid TC-12 twin engine tractor.
1—Euclid 22-ton rear dump. Good.
1—Euclid 18FD, 15-ton rear dump.
1—Mack LRS 15-ton rear dump. Rebuilt.
1—Euclid tractor with 3200 gal. water tank semi-tlr.
1—Pullman R-600, 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU.
1—International TD18 with cable bulldozer blade.
1—Caterpillar D-4 TRACTOR ONLY.
1—Caterpillar D-6 with hydraulic angle dozer blade.
1—International 300 tractor, with loader, backhoe.
1—Allis Chalmers HD-19 tractor with cable bulldozer blade.
1—LaPlante Choate 13½-yd. cable scraper.
1—Baker Lull 65 diesel shoeloader. Reconditioned.
1—Ateo H85, 10½-yd. Hydraulic Scraper.
1—Hough HA Gas front end loader. Reconditioned.

SHOVEL ATTACHMENTS

Lorain 820, 2-yd. 23' boom, 21' stick.
Lorain 50, 1-yd. 21' boom, 17' stick.
Lorain 40, ¾-yd., 19' boom, 16' stick.
Lorain 50A, ½-yd., 16' boom, 13'4" stick.
Osgood 902, 2-yd., 24' boom, 20'6" stick.

BACKHOE ATTACHMENTS

Lorain 40A, 18' boom, 7' stick, 28", 36" or 44" bucket.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 PFM. Rebuilt.
Cat. D8800, 88 H.P. at 1000 RPM.
Cat. D13000, 128 HP. at 1000 RPM. Rebuilt.
GMC Twin Diesel, rebuilt.
GMC 3021C, 3-cylinder, new.

AIR COMPRESSORS

105 cu. ft. Leroi Tractair with dozer, backhoe.
105 cu. ft. Ingersoll-Rand gas portable.
125 cu. ft. Jaeger gas portable.
210 cu. ft. Gardner-Denver gas portable.
315 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand, Waukesha power.
600 cu. ft. Gardner-Denver diesel portable.
420 cu. ft. Gardner-Denver 2-stage stationary. Rblt.

L. B. SMITH, INC.
Camp Hill, Pa.
Phone Harrisburg REgent 7-3431

FOR SALE OR RENT

65 ton Whitcomb Diesel Elec. Loco.
44 ton Whitcomb Diesel Elec. Loco.
25 ton Davenport Gas-Elec. Loco.
50 ton American Guy Derrick, 115' Mast, 100' Boom
90 HP Lidgerwood 2d Diesel Hoist
150 HP Amer. #140 3d Gas Hoist
1½ yd. Lima 602 Crane, 110' Boom
3 yd. Manit. #3900 Crane, 100' Boom
2½ yd. Link-Belt K-595 Crane, 120' Bm.
110 HP Clayton Port. Steam Generator
5 yd. Bucyrus 1208 Electric Dragline

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

FOR SALE

3—29-T BUCYRUS-ERIE Wire Line Blast Hole Drills
2—42-T BUCYRUS-ERIE Wire Line Blast Hole Drills
1—New RCA Metal Detector—10" x 36" Aperture
1—FULLER-KINYON System
1—Second-hand Drop Ball (3200±)
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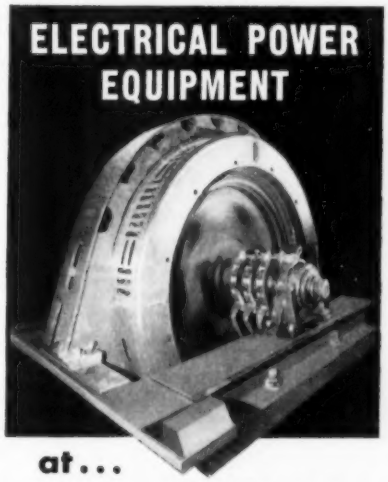

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200	West	Slip Ring	720	
200	Al Chal	Slip Ring	600	(enclosed)
150	West (3)	Sq Cage	1800	(TEFC)
125	West (2)	Sq Cage	1800	(TEFC)
125	GE	Slip Ring	720	
100	GE (2)	Slip Ring	600	
75	West (2)	Slip Ring	1200	
60	Cont	Sq Cage	3600	(TEFC)
60	GE	Sq Cage	1800	(TEFC)
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—SMALL GYRATORY CRUSHERS—
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48"x60" Allis Chalmers Blake Jaw Crusher
14"x20" Austin Western Jaw Crusher
36"x36" Traylor Blake Jaw Crusher
10"x36" Buchanan Blake Jaw Crusher
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10"x20" Power Blake Jaw Crusher
24"x36" Farrell 14B Blake Jaw Crusher
30"x42" Buchanan Jaw Crusher
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2—36"x48" Traylor Blake Jaw Crushers
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18"x32" Ditto
9"x36" Ditto
10"x36" Ditto
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36" Symons Cone Crusher
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Blue Ball, Pennsylvania

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7'x120' Rotary Kilns
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Have you any machinery that you want to sell?

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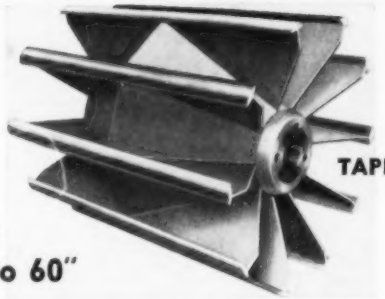
STOP BUILD-UP

USE
VAN GORP TURN-CLEAN PULLEYS



TAPER-LOCK

SIZE
8" to 60"

VAN GORP SELF CLEANING PULLEYS
STOP BUILD-UP

Van Gorp Self Cleaning Pulleys offer individual wing construction that prevents any material build-up between the belt and pulley. Self cleaning cone design automatically discharges foreign material to the sides of the pulley. It is no longer necessary to spend valuable time cleaning material from the belt or pulley. Van Gorp Pulleys stay clean and insure proper belt alignment. Reduce your maintenance cost! Be sure you specify Van Gorp Turn-Clean Pulleys with Dodge TAPER-LOCK bushings on all your conveyors or bucket elevators.

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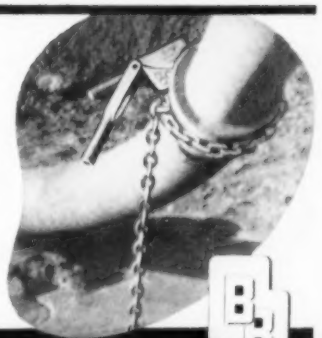
Sturdy • Practical • Dependable • Economical

Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply... positive in action. Write for illustrated folder, today.



THE BLACK BROTHERS CO., INC.
9th Ave. at 4th, Mendota, Illinois

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Enter 215 on card, page 105 →

Can Move 12,000 Tons Daily. This is the gunboat plane of the Coaldale Mining Company, Coaldale, Pa.—one of the most efficient inclined haulageways you'll find. Loads from the rotary dump are whisked up the plane to the breaker, where only a few seconds are required for the drop. Though the plane is built at a steep 61 degrees, the high-powered system can handle more than 12,000 tons of coal in a normal working day.

The balanced hoist is rigged with Bethlehem Type U wire rope, Purple Strand grade. Type U is a 6x21 construction combining strength, flexibility, and abrasion-resistance. This tough, durable 2-in. rope has always proved a match for the heavy loads and uphill pull at the Coaldale incline.

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Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:
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Enter 217 on card, page 105 →

Accident! But Anaconda SH-D Shovel Cable kept on working in this open-pit mine. Good proof of Anaconda Cable's ability to take it.

CAVE-IN! But this unposed photo shows

Anaconda Shovel Cable still working!

Above you see part of an actual cave-in. The Man from Anaconda was Johnny-on-the-spot with a camera, and the picture shows part of what he saw. The complete cave-in was much more extensive.

We use this photo to show how well Anaconda Shovel Cable stands up under abuse. Jagged rocks, sheer drops over cliffs, water-filled ditches—the Anaconda cable is built to endure all these hazards.

We're miners ourselves. All our practical experience—plus knowledge of what makes the best insulation and protective coverings—has gone into this cable.

Anaconda Shovel Cable has a strong, extra-tough—yet highly flexible—neoprene jacket. It resists abrasion, mechanical abuse, flame and water. Its long-lasting Anaconda Butyl Insulation has high dielectric strength, and outstanding resistance to ozone, heat and moisture.

It all adds up to a cable that's ready when the going's rough. For full information about this rugged shovel cable, contact the Man from Anaconda or your Anaconda distributor. Or write directly to: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

LIVE BETTER ELECTRICALLY

SEE THE MAN FROM ANACONDA®

FOR SHOVEL CABLE

WESTERN PRECIPITATION'S

NEW THERM-O-FLEX COLLECTOR

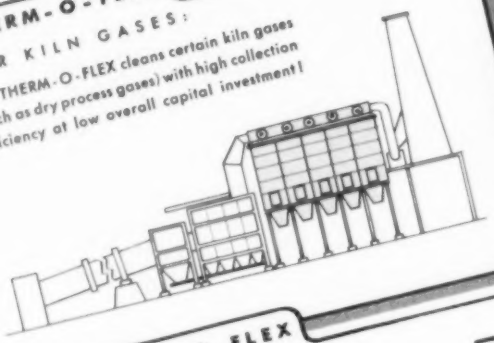
CLEANS GASES TO 550°F

with VIRTUALLY 100% COLLECTION!

THERM-O-FLEX

FOR KILN GASES:

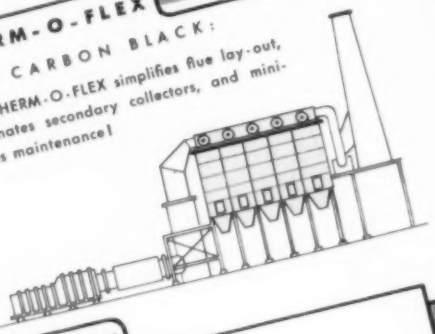
The THERM-O-FLEX cleans certain kiln gases (such as dry process gases) with high collection efficiency at low overall capital investment!



THERM-O-FLEX

FOR CARBON BLACK:

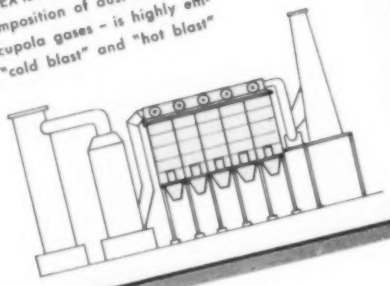
The THERM-O-FLEX simplifies flue lay-out, eliminates secondary collectors, and minimizes maintenance!



THERM-O-FLEX

FOR CUPOLA GASES:

The THERM-O-FLEX is unaffected by the varying chemical composition of dust and fume particles from cupola gases – is highly efficient on both "cold blast" and "hot blast" processes!



Western-Precipitation brings another important new advancement to the gas cleaning field — the THERM-O-FLEX Collector — a filter type of unit with many advantages over conventional filter equipment...

▶ The THERM-O-FLEX features glass silicone treated filter tubes that efficiently handle gases as hot as 550° F!

▶ The THERM-O-FLEX tubes are cleaned *automatically* by intermittent collapsing (not by destructive shaking). This assures uniformly low pressure drop combined with long filter life!

▶ The THERM-O-FLEX has *no moving parts* — nothing to require frequent servicing or replacement!

RESULT — highest collection efficiency combined with lower cost, less maintenance and uniformly low pressure drop on a wide range of applications, a few of which are shown at left.

Let Our Experienced Engineers study *your* dust or fume collection problem — *large or small* — and show exactly how **THERM-O-FLEX** gives new standards of performance at low installation costs. No obligation, of course!

THERM-O-FLEX literature will gladly be sent. Write or phone, the Western-Precipitation office nearest you.

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CMP Combination Units
DUALAIRE Jet-Cleaned Filters
THERM-O-FLEX Hi-Temp Filters
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HI-TURBIANT Heaters

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Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

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Save sand...
make PROFITS!

DENVER *SRL* PUMPS

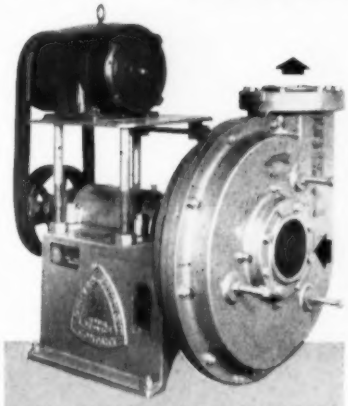
Save sand from dewaterer overflow

This 6" x 6" DENVER SRL Pump in service at Boulder Sand & Gravel Co., Boulder, Colorado, pumps dewaterer overflow to a cyclone, where valuable fine sands previously lost in the overflow, are saved.

Close tolerances, plus long part life from pressure-molded "dense" rubber bonded to metal insert, keep performance of DENVER SRL Pumps at peak efficiency throughout pump life—assure highest production of cyclone sand-slime separation system at lowest operating cost.

If you pump sands at your plant, it will pay you to check into the DENVER SRL Pump. Capacities to 3000 g.p.m. DENVER SRL Pumps have for years been recognized as the most efficient pumps for handling slurries, slimes and abrasive pulps. And they're now priced so low that no operator can afford to risk any pump quality or service less than that of DENVER SRL. Recommendations and flowsheets on request with no obligation. Write for Bulletin "Turning Cyclone Pumping Costs Into Profits."

***New!* "Production of Specification Sand by Rod Mills"—a booklet of technical information for operators who have sub-standard sand deposits.**



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at the DENVER plant or in strategically located dealer stocks. 2" up to 10" sizes.

COMPARE DENVER STANDARD CONVEYORS AND BELT FEEDERS WITH OTHERS

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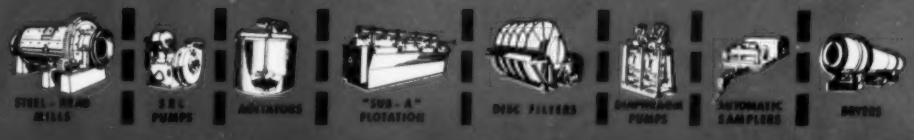
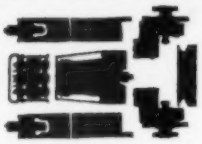


CONTRACTORS CUT COSTS WITH EIMCOS'

Move more earth at less cost with Eimco heavy-duty equipment

INDEPENDENT TRACK ASSEMBLY
Each track is powered and controlled separately — Tractor spin turns in it's own length, with one track in forward and the other in reverse.



UNIT ASSEMBLY
Each major tractor component is a separate assembly for easy maintenance or removal without disturbing other components.

INSTANT REVERSAL
No stopping, manual clutching or gear shifting to change directions — A pull on the track control levers immediately reverses the tractor.

FULL VISIBILITY
Up-front operators position eliminates all guess work in dozing, digging, pushing and loading operations.

Eimco heavy-duty earth moving machinery will permit lower bids on construction work.

Here are reports from a few jobs where Eimco equipment is being used:

1. Underground limestone quarry working an Eimco 105 on 2 levels to do all underground loading. — "Our maintenance parts and labor for the past 21 months have cost 2½ cents per ton."

2. Road contractors in the deep South — "We now have more than 17,000 hours on our 105 and have not had to open the transmission for any reason."

3. "We averaged better than 45 feet a day on our job mostly because of the 105's." — This letter from a tunnel contractor who is driving a large heading with two 105's working side by side.

4. Quarry contractor — "In a few days we should receive our third Eimco 105. These machines are gradually taking over all production and are replacing the boom shovel."

5. Railroad contractor — "Our 105 has replaced a 1½ yard boom shovel and a bulldozer we had used to move stone up to the shovel.

THE EIMCO CORPORATION • SALT LAKE CITY, UTAH

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